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WORKING TOGETHER IN '52

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Just what do we mean by "working together in '52"? To my mind this means not only the medical profession working together but includes other organizations whose aims are similar to ours. First of all, however, we must unify the members of the medical profession. We have too many members beset with indifference. Our county societies have in many areas become organizations of little influence owing to poor attendance. These county societies must be revitalized. Physicians must be brought to the realization that medical progress will cease unless doctors learn to work together. Wherever in the world strong medical organizations do not exist, there will be found the countries with low standards of medical care and medical education. Wherever the medical profession did not stand together as a unit, these organizations have been taken over by politicians.

One often hears the complaint that medical societies are reactionary and run by small cliques. If they are, whose fault is it? Usually it is the fault of the complainers who have stood aside and contributed only backbiting to the solution of medical problems. If the members of a society would take an interest in its welfare, then the society would become a forceful agent in the community. If you do not like what your local society does, it is probably because you have made no fight to change its policies. A society is the product of its members. The majority must rule, and the minority must accede to the will of the majority until it can persuade the majority to change its policies. Nothing is accomplished by decrying the efforts of those who work, unless those who criticize are willing to work too, and show how things can be bettered.

What holds for a local society also holds for a state or national body. Since the A. M. A. has adopted dues as a requisite for membership it has lost members. Why has this been the case? There are four reasons why a physician does not pay his A. M. A. dues: 1. He is exempt from dues for a variety of reasons. 2. He is socialist in his thinking and, therefore, out of sympathy with the A. M. A.'s campaign against socialized medicine. 3. He is totally uninformed about the A. M. A. and what it stands for. 4. He is not grateful for all that has been done for him.

It is up to those of us who pay our dues to educate the uninformed and convert the ungrateful. The mere facts that a physician is able to practice medicine in high-grade hospitals with the protection of certified therapeutic agents and apparatus, that he has had a high-grade medical education, and that he is practicing in a free state, untrammeled by political regimentation, he owes to the A. M. A.

The American Medical Association must have within it proponents of varying opinions. That is healthy. It is never going to pursue any policy that is not in accord with the opinions of the majority of its members, if it knows what those opinions are. Urge your colleagues to take an active part in society work and to express their opinions. The A. M. A. has to be governed by majority desires. You may not agree with the action or the policy of the federal government, but you do not give up your citizenship because you do not agree. You fight or you ought to fight for a change in those activities or policies.

One trouble today in the United States is the lack of civic responsibility of many of our citizens. It is the same indifference seen in our medical societies carried on into civic life. Our duties as physicians are great, but our duties as citizens are even greater.

This country has been built on a spirit of competition and free enterprise. During recent years there has been a studied attempt to diminish the importance of self-reliance or the desire to improve one's lot and substitute instead a dependence on government. When one loses

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the desire to help himself and provide for his family, he has lost much of his independence. There has been an attempt to set class against class and to convince the public that it should rely more and more on government and less and less on personal initiative. Instead of depending on one's own resources for many of the essentials of life, the people are being taught to turn to government. It does not seem to be realized that nothing in this world is free. We either pay for it in fees, wages, or premiums, or we pay for it in taxes. No government has any money except what it takes out of your pocket and mine.

Our forefathers set up a balanced government, evenly divided among the legislative, judicial, and executive branches. The executive branch recently has taken on more and more authority and shoved the other two further into the background. We are ruled today largely by administrative law—law written by bureaucrats who are appointed and not elected. We have become a bureaucracy, in fact.

There are those in our government who are trying to have us follow in the footsteps of certain European countries, countries which are socialist in their thinking and socialist in action, countries so decadent in their economy that they are calling upon a capitalist country to support their socialistic experiments. Corruption has entered into government. Elected officials have been dealing with gangsters and gamblers. Respect for government has diminished.

There is too little training in this day and age in American history and American institutions. Many students reach college and even graduate from it knowing little about the history of this country and its founding, but much about socialism.

Socialism has never worked anywhere, and yet we are steadily becoming less democratic and more socialistic in our government. Is it not time we took stock of ourselves? When this country was founded, the principles on which it was founded were new. No one outside of this country thought they would work, but they did work and this country became the greatest in the world, exemplifying the doctrine of freedom, the doctrine of free enterprise, the doctrine of every man, no matter what his origin, having the opportunity to follow any walk of life and to better himself. A premium was placed on initiative and individual efficiency. Now we have in office in many places those who would revert either to authoritarian government or to the type of government that is paternalistic, where the citizen swaps his freedom for government subsidies, the type of government that becomes the master of men and not their servant. We have a minority government, because, in the last national election, only 47 per cent of those entitled to vote actually voted.

If we are to work together in '52 we must arouse not only the members of our profession to their civic responsibilities, but, through our relations with other organizations and with the public, we must arouse all persons to a sense of this civic responsibility and reawaken the spirit of Americanism, the spirit of competition, and the spirit of free enterprise. We must see to it that regardless of party label we elect only those officials who believe in the American way of life, who believe in a democracy within a republic, who are honest, and who will not tolerate corruption in public office.

This country is not at the cross-roads; it has already passed the cross-roads and is fast moving down the road marked "Socialism." It is up to all true Americans who believe in our institutions and are proud of our history to turn the country back to the cross-roads and once more start down the only road that leads to freedom. The medical profession cannot do this alone, but it can help. It can lead the way, and it can enlist the support of other organizations and individuals imbued with a spirit of patriotism who do not want to see the United States go the way of the Roman Empire, or the way of "the glory that was Greece"; who want to return to a government of the people, by the people, and for the people, and who do not want to continue a government by bureaucrats who aim to enslave the people and make them its servants.

This is what "working together in '52" means to me. It is not an easy task. It cannot be left for a few persons to do. It requires the back-breaking work not only of every physician but of every patriotic citizen. This is not a partisan fight. It is a fight for Americanism—a fight to preserve what is left of our institutions and to restore as far as possible what has been destroyed of our individual liberty. It is your fight—not as a physician but as a citizen. We have stopped socialized medicine for the time being only, and that campaign will have been in vain unless, now, as citizens we stop the socialization of our entire economy and, in fact, of our entire country.

The tide can be turned in 1952, but we must work together to do it, and we cannot wait even until January to start. The time to work together is *now*.

Surgical Treatment of Varicose Veins.—As of May 2, 1951 there is no cure for varicose veins. There is the possibility of mechanically improving the circulation to the extremities by the judicious use of procedures fitted to the pathologic picture of the return flow system individually encountered in the increasing number of humans so afflicted. There is also the possibility that by choice of the wrong procedure, or only half-way treatment, the condition may be unaltered, yes, even made worse. The doctor who undertakes the surgical attempt to improve the varicose patient should be aware that he is commencing a tedious, long, patience-tasking and often poorly appreciated struggle, that is only going to be successful inasmuch as it has been prepared for and inasmuch as it is carried through to its completion. There can be no compromise, and a patient prepared for the program to follow the initiation of care is a patient infinitely better readied for the rigorous job ahead. For this reason it is imperative that the first conference with the surgeon who is assuming the task be detailed and specific in outlining the limitations that are inherent in the therapy offered. The doctor who glibly states that he will cure the veins is either ignorant of what is possible, or else is worried that the patient will not be convinced of the efficacy of the treatment, which, up to this time, is available.—Laurence D. Hilger, M.D., Surgical Treatment of Varicose Veins, *Minnesota Medicine*, September, 1951.

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CLINICAL MANIFESTATIONS OF ARTERIOSCLEROSIS

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and
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Clinically the problem of arteriosclerosis is related mainly to occlusion of the small or medium-sized arteries. The main organs or body regions where arteriosclerotic disease wreaks havoc are the brain, the heart, and the lower limbs. There is a basic similarity in the nature of acute or chronic arterial occlusion, but the dissimilarity in symptoms is related to the varying minimal oxygen demands of the tissue involved and the duration for which oxygen deprivation can be endured without irreparable harm. One could construct a table showing the degree of vulnerability of various types of tissue to lack of oxygen. On such a list nervous tissue would be at the top, with renal and myocardial tissues considerably down the scale, and skin and voluntary muscle near the bottom. The results of arterial insufficiency on the integrity of the total person obviously will depend on the importance of, and possibility of functional replacement of, the tissue jeopardized or destroyed.

In addition to the occlusive lesions related to the atherosclerotic process per se, there are other less frequent but still important arteriosclerotic lesions. These are (1) aneurysms, particularly of the abdominal aorta, popliteal, or femoral arteries; (2) the pressure effects of arteriosclerotic vessels themselves as illustrated by specific lesions of the cranial nerves in the base of the skull, and (3) arterial embolism from a more central nidus of thrombosis, as from within the heart affected by infarction. Isolated calcific aortic stenosis in the aged is to be considered an arteriosclerotic lesion and is by no means an insignificant, causative factor in heart failure and sudden death.

The term "generalized arteriosclerosis," while often used, is misleading and only superficially acceptable. The disease may be widely disseminated throughout the arterial system, but it retains a certain irregular distribution both along the long axis of the artery and about its circumference. From the degree of atherosclerosis in one part of the body, as for instance the heart, one cannot predict the degree of similar lesions in other parts of the body, as in the brain. The usual benign nature of the Mönckeberg type of arteriosclerosis, which is evidenced by thick nodular peripheral arteries, is well known. We desire also to join in the crusade against the teaching of a close relationship between age and arteriosclerosis, which is either accepted or implied in past medical-school curriculums. For purposes of emphasis, let us make the provocative statement that while aging is relentless, atherosclerosis is not necessarily a progressive nor irreversible process.

BRAIN AND SPINAL CORD

It is most difficult to assess the role of cerebral arterial disease in the causation of personality disintegrations or dissolutions seen in elderly persons. Parenthetically, one must refrain from labeling a person as arteriosclerotic if he is older and holds a different "fixed" viewpoint from oneself. The possibility of being able to quantitate brain damage from studies of oxygen uptake by new technics is likely but will not be available to us as physicians. The question occasionally arises as to whether a cerebrovascular accident might be evidence of a person's unsound mind in making a will—perhaps better said, in making a new will, maybe not in favor of the relatives. We believe that there would be agreement that a hemiplegic condition is a manifestation of focal damage only and as evidence indicating intellectual deterioration would be most circumstantial and unreliable. The mental changes that are usually attributed to arteriosclerosis include impaired memory, poorly sustained attention, irritability, emotional instability, and poor cooperation.

Apart from the clinical conditions associated with occlusion of the main cerebral arteries, surprisingly few major afflictions or established syndromes result from arteriosclerosis of the central nervous system. One must accept the fact that many symptoms resulting from cerebral arteriosclerosis are not clinically recognizable as such. To the trained neurologist, arteriosclerosis, as compared with neoplasm, is a most disappointing disease in that it only rarely produces the discrete lesions that are of such delight as exercises in pinpoint localization. The usual symptoms of occlusive vascular episodes of the brain are often grouped in the all-inclusive category of strokes. Hemiplegia, hemianopsia, and aphasia are common manifestations. While hemiplegic patients tend to be put in a single group, there is no exact reproducibility of the syndrome, and a careful, even though it may be relatively simple, neurological examination is not only indicated but will be rewarding. Each physician in his lifetime probably sees a patient with thrombosis of the posterior inferior cerebellar artery several times, and if he charts his findings, not at first recognizing the syndrome, recourse to a book on either neuroanatomy or neurology will give him the diagnosis. "Thalamic" pain, pseudobulbar palsy, tremors, extrapyramidal syndromes, and major convulsive disorders are known to follow cerebral vascular insults. It is a strange but well-known fact that at times necropsy will reveal extensive atherosclerosis of cerebral vessels, when a review of the clinical history fails to reveal any neurological disturbance. Similar findings are often made in other parts of the body also, for example, in the heart or extremities. Most neurologists admit an inability to assess senescent morbidity accurately in terms of predicted severity of the cerebral arteriosclerosis.[1]

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Read in the Symposium on Arteriosclerosis and Hypertension before the Joint Meeting of the Sections on Experimental Medicine and Therapeutics and Internal Medicine at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

1. Woltman, H. W.: The Effects of Arteriosclerosis on the Central Nervous System, Chicago M. Soc. Bull. 52: 363-368 (Nov. 12) 1949.

Ophthalmological examinations are of greater reliability in the interpretation of the severity of the hypertensive state than they are as a guide to the degree or predominant location of disseminated atherosclerosis. In particular, examinations of retinas have not been of any consistent value in determining the presence or absence of significant atherosclerosis in other areas. This experience bears out the opinion which Wagener of our clinic expressed years ago. Recent careful histopathological studies by Alpers, Forster, and Herbut [2] have shown that there is no close relationship between retinal atherosclerosis and sclerosis of the small arteries supplying the brain.

The vascular supply of the spinal cord is more than adequate, and major vascular syndromes are infrequent. Rarely thrombosis may occur in the anterior spinal artery and produce a characteristic diplegia with dissociated sensory changes. Occasionally other bizarre or indefinite neurological symptoms, particularly paresthesia, may be attributed to arteriosclerotic changes in the cord. The term "intermittent claudication" of the spinal cord has appeared in the literature, but we doubt that such an entity exists.

HEART

The heart is the organ that has attracted the most extensive studies concerning the nature of the arterial insufficiency resulting from disease of its nutrient arteries. The primary and traditional symptom of such arterial insufficiency is angina pectoris. Severe arterial insufficiency frequently leads to acute myocardial infarctions, the typical clinical picture of which is all too familiar. Electrocardiography has been accused of having been a detriment to progress in research in arteriosclerosis, draining the efforts of investigators into relatively sterile researches, and the technic has been found wanting as an indicator of early coronary disease and often of advanced coronary disease. Despite these justified laments, electrocardiographic studies have done much to focus attention on coronary disease and to allow careful serial clinical studies of patients.

There are still many gaps in our knowledge of the factors determining the relative benignity of coronary disease. Some persons live for many years with no pain or real disability; others have mild or severe, typical or atypical effort pain; others have repeated myocardial infarctions, and still others have cardiac enlargement and failure. The antemortem course cannot be reconstructed from a study of the postmortem specimen. In the uncomplicated case of angina pectoris, it would be a brash physician who would give any exact prognosis. The life expectancy of a group of patients having angina pectoris can be stated generally by saying that the yearly mortality rate is about 10%.[3]

Coronary sclerosis increases with age, but in so far as group studies indicate, the actual amount of coronary sclerosis is as extensive in a group of men in the sixth decade as in a group of men in the seventh or eighth decades.[4] Put another way, if one meets on a street two men, one 75 and the other 55, there would be an equal chance as to which one had the severer atherosclerotic narrowing of the coronary vessels.

Besides the syndromes of angina pectoris and acute myocardial infarction, a border state between these conditions must be recognized. In this border state there is the condition of prolonged myocardial ischemia, which eventually may progress either toward recovery or actual infarction. It is generally recognized that about two-thirds of acute myocardial infarctions are related to an acute occlusion of the coronary artery, and in the remaining third the infarction occurs without any immediately preceding acute occlusion but can be said to be related to an acute coronary insufficiency. Myocardial infarctions related to coronary narrowing but not to an actual occlusion are characterized by their subendocardial distribution, absence of a pericardial reaction, rarity of cardiac rupture or development of aneurysm, and their tendency to be more frequent in large hypertrophied hearts.[5] The incidence of mural thrombosis is similar to that of infarcts resulting from acute occlusion. The data gathered and analyzed by Yater and his associates [6] on "coronary deaths" in men less than 40 show that three-quarters of these men died without myocardial infarction, and nearly half did not have recent thrombotic occlusion.

In the heart acute arterial occlusion may occur without producing any infarction; the explanation is that the previously stenosed vessel has stimulated the development of collateral circulation. It is well recognized too that acute myocardial infarction may occur without pain, and in this group of patients diabetics with some degree of neuropathy have a large representation. In addition to the clear-cut syndromes of coronary sclerosis, the disease also may contribute to the heart failure associated with aortic valvular disease or essential hypertension or with both.

Syncopal reactions are relatively common in patients who have arteriosclerosis. Adjustments to the change to the erect position are often less rapid, so that faintness and giddiness may be complained of. It is to be remembered also that hypersensitive carotid sinus reflexes are often encountered in patients with arteriosclerotic changes in their carotid vessels. Syncope also may be a symptom of calcific aortic stenosis, and it may be evidence or a manifestation of intermittent heart block, called "Adams-Stokes attacks."

LOWER EXTREMITIES

The peripheral arterial circulation can be assayed more directly than the circulation of other parts of the body, for an adequate clinical examination will reveal the situation with accuracy. The story of intermittent

2. Alpers, B. J.; Forster, F. M., and Herbut, P. A.: Retinal, Cerebral and Systemic Arteriosclerosis: A Histopathologic Study, Arch. Neurol. & Psychiat. **60**: 440-456 (Nov.) 1948.

3. Parker, R. L.; Dry, T. J.; Willius, F. A., and Gage, R. P.: Life Expectancy in Angina Pectoris, J. A. M. A. **131**: 95-100 (May 11) 1946.

4. White, N. K.; Edwards, J. E., and Dry, T. J.: The Relationship of the Degree of Coronary Atherosclerosis With Age, in Men, Circulation **1**: 645-654 (April) 1950.

5. Miller, R. D.: Burchell, H. B., and Edwards, J. E.: Myocardial Infarction With and Without Acute Coronary Occlusion: A Pathologic Study, Arch. Int. Med., to be published.

6. Yater, W. M.; Traum, A. H.; Brown, W. G.; Fitzgerald, R. P.; Geisler, M. A., and Wilcox, B. B.: Coronary Artery Disease in Men 18 to 39 Years of Age: A Report of 866 Cases, 450 with Necropsy Examinations, Am. Heart J. **36**: 334-372 (Sept.); 481-526 (Oct.); 683-722 (Nov.) 1948.

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claudication is usually recognized without difficulty, though if the pain be in the buttocks or insteps, the diagnosis seems to be missed oftener. To draw a relationship to coronary atherosclerosis, the term "angina cruris" is not amiss. One can observe evidence of loss of growth of hair and nails, inadequate filling of the capillaries and veins of the feet, or actual gangrene. Early loss of vitality in tissues of the feet, particularly at pressure points, may readily be overlooked if not searched for. In clinical practice it is rare that one needs the information to be gained from plethysmography, oscillometry, arteriography, measurements of circulation time, or precise skin temperatures, although these may be important in physiological investigations. The apparent simple examination of the arterial pulsations is an important test of adequacy of the peripheral arterial circulation. It cannot be done in a desultory manner, and the first step in the investigation is for the examining physician himself to be comfortable. It must be remembered that an absence may mean no more than interference with transmission of the pulse wave. The degree of abnormal pallor when the feet are elevated and the speed with which the veins fill when the feet are moved to the dependent position are better measures of the impoverishment of arterial circulation.

While in the heart sudden arterial occlusion is usually recognized as a catastrophic event, analogous events in the legs are not as universally recognized. Abrupt impairment of the arterial circulation owing to arterial thrombosis occurs in about 10% of all patients who have chronic occlusive arterial disease resulting from atherosclerosis.[7] The symptoms of sudden arterial occlusion affecting the main artery of the leg are variable. Classically, there is pain or numbness and variable degrees of paresis, pallor, and coldness. On examination there is absence of pulsations, pallid skin, collapsed veins, hypesthesia or anesthesia, and lowered temperature of the skin. Unless these early signs and symptoms regress within several hours, necrosis (gangrene) of variable extent or persistent pain indicative of ischemic neuritis usually results.

Ischemic neuritis, observed not uncommonly in patients with chronic occlusive arterial disease in the legs, is manifested by constant or paroxysmal pain, commonly described as burning or jabbing. It involves areas over which the skin is intact, usually the dorsum and plantar surface of the foot; it may extend into the leg. There is an associated hyperesthesia of the skin.

SOME UNUSUAL AND ISOLATED PHENOMENA

The most frequent problems resulting from arteriosclerosis have been briefly outlined in the preceding paragraphs, but in addition it seems worth while to mention some of the unusual or isolated phenomena resulting from arterial disease. One might imagine oneself on grand rounds with a professor who has called back into the hospital many of the patients with unique conditions to impress a group of visiting dignitaries. As one passes from bed to bed, one might see the following patients: The first might be a middle-aged man with a well-documented story of severe hypertension for more than 10 years; he has had a stroke, and now the blood pressure has been normal for 2 years. The cerebrovascular accident has unexpectedly and unpredictably cured his essential hypertension.

The next patient is one who complained of the sudden onset of a continuous noise in his head and presents a proptosis of one eye. A loud continuous bruit is heard over the side of the head, and the diagnosis of an arteriovenous fistula within the cavernous sinus is made. Another patient, elderly and stooped, presents a marked pulsation on the right side of the neck. It has been suspected that she has an aneurysm, but it is demonstrated that the carotid artery is only bent forward, producing the clinical picture of the "kinked carotid." The next patient is elderly and came to the physician because of postural faintness. The physician finds difficulty in determining the blood pressure in the arms, and the pulsations in the arteries of the arms and neck are minimal. There are good femoral pulsations and hypertensive blood pressure readings in the legs. The picture appears as a "reverse coarctation" and is usually due in patients who are old to atherosclerotic narrowing of the origins of the vessels arising from the aortic arch.

In the next bed perhaps there is a patient who has a history of several prolonged periods of chest pain. The electrocardiogram showed evidence of anterior myocardial infarction, and recently there had appeared a systolic thrill and loud murmur, which was maximal in the midsternal area. There has been a rupture through the infarcted ventricular septum, and this patient has been the rare one that has survived for some months. The professor passes a young woman with Cushing's syndrome and advanced atherosclerosis to spend a little time with the patient in the next bed, also a young woman. She has had clinically a myocardial infarction with diagnostic evidence on the electrocardiograms. At present she is troubled by marked effort intolerance related to intermittent claudication and angina pectoris. Age is emphasized as obviously not being a factor; the condition is one of xanthoma tuberosum, as is readily apparent because the small yellowish plaques about the eyes are noted and the nodules in the region of the Achilles tendons and elbows are palpated. The next patient is a man who has classical intermittent claudication, yet there are normal pulsations in the arteries of his lower extremities. When the man walks, the feet become pallid and remain so for a minute or two after his exercise, during which time pulsations have disappeared in the arteries. This is the syndrome of arteriospastic claudication or paradoxical reaction (constriction) of arteries to exercise. It is wondered whether such a reaction could occur in the coronary circulation, but the professor receives no encouragement for such a hypothesis.

To end these special rounds, the professor may have kept his prize patient, and one could not but be affected by his ecstasy as the history is given. A man had normal blood pressure one month, then unexpectedly severe hypertension developed; an excretory urogram revealed no evidence of function of one kidney. The surgeon re-

7. Allen, E. V.; Barker, N. W., and Hines, E. A., Jr.: Peripheral Vascular Diseases, Philadelphia, W. B. Saunders Company, 1946.

moved the kidney, and the blood pressure has been normal thereafter. The lesion was an atherosclerotic stricture of the renal artery, with the production of an ischemic kidney and renal hypertension.

Many other patients would have been worthy of presentation, but these should have been adequate to indicate that the clinical study of arteriosclerotic patients may lead to finding fascinating symptom complexes mixed with the more stereotyped conditions.

In conclusion, the manifestations of arteriosclerosis as they may appear in the patient have been discussed. The importance of occlusive intimal disease (atherosclerosis) has been emphasized as the most important category of arteriosclerotic disease. When one expands the problem to consider the morbidity and mortality within the population at large, the picture is an appalling one. The epidemiological manifestations of arteriosclerosis are deaths of persons in their most productive years, the crippling of many others, and a heavy sociological problem of caring for many disabled persons, who tend to occupy our hospital beds for months or years.

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CHOLESTEROL, "GIANT MOLECULES," AND ATHEROSCLEROSIS

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The general idea is well established that there is an important relationship between the concentration of cholesterol in the blood plasma and the development of atherosclerosis and coronary heart disease. The study of the epidemiology of the disease is as yet only in its crudest beginnings, but two points are agreed. Whenever there is a persistently high level of cholesterol in the blood, there is a tendency toward early and severe atherosclerosis. And whenever there is severe atherosclerosis, there is a high incidence of coronary heart disease.

The list of diseases in which occurrence of coronary heart disease is unduly frequent is familiar: diabetes, nephrosis, hypothyroidism, xanthomatosis. These have the common property of being associated with hypercholesteremia. Moreover, in animal experiments whenever it is possible to produce sustained, marked hypercholesteremia, there is eventually development of atherosclerosis. Finally, there is the crucial fact that patients with definite coronary disease tend to have distinctly elevated levels of cholesterol in the blood serum.[1]

In spite of these facts, there is insufficient information about the utility of the serum cholesterol measurement as an indicator of atherosclerosis or as a predictor of impending danger from coronary heart disease. There are several reasons for this: 1. Normal standards for serum cholesterol have been inadequate until recently. 2. In living man coronary heart disease can be recognized but not atherosclerosis alone. 3. Patients with coronary disease show a wide range of concentrations of cholesterol in the serum, and this overlaps the wide range of values found in persons who are clinically healthy.

SEARCH FOR OTHER CRITERIA

It is understandable, then, that there is a vigorous search for other characteristics by which healthy persons and those who have or in whom coronary heart disease may develop can be discriminated. It is particularly desired to have a measure of the tendency to coronary disease before appearance of the clinically recognizable condition. This is essential for the development, testing, and application of preventive measures; its absence is a major reason for the fact that as yet no real preventive hygiene can be offered.

The search for discriminating characteristics has concentrated on the blood for good reasons: 1. With rare exceptions, coronary heart disease requires the presence of atherosclerosis for its development. 2. A basic characteristic of atherosclerosis is the deposit of cholesterol and fatty materials in the arterial walls. 3. The deposit substances do not seem to be manufactured locally in the arteries, so they must come from the blood. 4. Blood is accessible for sampling and analysis.

Besides total cholesterol, attention has been devoted to cholesterol esters, fatty acids, phospholipids, and various ratios and combinations of these variables. So far none of these variables has been shown to be superior to the serum total cholesterol concentration as a predictor of coronary heart disease. Most recently there has been great interest in the lipoproteins and in certain low-density materials which may be separated in the ultracentrifuge. It is important to examine the evidence for the current excitement about these.

G SUBSTANCES OR "GIANT MOLECULES"

For some time it has been evident that most of the cholesterol does not exist in simple solution in the blood plasma but is associated in complexes with proteins and lipoids. Gofman and his colleagues in Berkeley have developed methods for estimating the amounts of such low-density complexes by observing their flotation in the ultracentrifuge.[2]

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Read in the Symposium on Arteriosclerosis and Hypertension before the Joint Meeting of the Section on Experimental Medicine and Therapeutics and the Section on Internal Medicine at the one Hundredth Annual Session of the American Medical Association, Atlantic City, June 15, 1951.

1. (*a*) Davis, D.; Stern, B., and Lesnick, G.: Lipid and Cholesterol Content of Blood of Patients with Angina Pectoris and Arteriosclerosis, Ann. Int. Med. **11**: 354, 1937. (*b*) Poindexter, C. A., and Bruger, M.: Cholesterol Content of Blood in Heart Disease, Arch. Int. Med. **61**: 714 (May) 1938. (*c*) Lerman, J., and White, P. D.: Metabolic Changes in Young People with Coronary Heart Disease, J. Clin. Invest. **25**: 914, 1946. (*d*) Collen, M. F.: Blood Cholesterol Studies in Coronary Artery Disease, Permanente Found. M. Bull. **7**: 55, 1949. (*e*) Gertler, M. M., and Garn, S. M.: Lipid Interrelationship in Health and in Coronary Artery Disease, Science **112**: 14, 1950. (*f*) Gertler, M. M.; Garn, S. M., and Lerman, J.: The Interrelationships of Serum Cholesterol, Cholesterol Esters and Phospholipids in Health and in Coronary Artery Disease, Circulation **2**: 205, 1950.

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It is the theory of the Berkeley group that certain of these complexes are somehow productive of, or at least are associated with, the development of atherosclerosis. The real villains in the piece, it is suggested, are the "giant molecules" which are characterized in the ultracentrifuge by —10 to —20 Svedberg units of sedimentation. It is convenient to call these the "G substances."

What is the evidence that the G substances are responsible for atherosclerosis and coronary heart disease? Qualitatively, it is exactly the same kind of evidence which supports the contention that the total cholesterol measurement is significant. The conditions in which occurrence of coronary heart disease is unduly frequent, i. e., diabetes, nephrosis, hypothyroidism, and xanthomatosis, are found to be associated with a tendency to high levels of G in the serum. When atherosclerosis is produced in animals by feeding massive doses of cholesterol, the level of G is much increased. And when the serum G is measured in patients with coronary heart disease, there is found a distinct tendency toward higher levels than are found in clinically healthy people.

But how does the G measurement compare, in these respects, with the simple measurement of total cholesterol? A full answer would require long-range and large-scale researches, but highly significant indications can be obtained now. In animal experiments what is the correlation between the degree of atherosclerosis and the serum level of G, on the one hand, and of cholesterol, on the other? How sharply is it possible to discriminate between coronary patients and clinically "normal" persons with the G criterion as compared with the cholesterol criterion? What is the correlation between the G and the cholesterol concentrations in the serum? The California workers have not provided analyses of these points, but their own and other raw data in the recent literature can be assembled and analyzed.

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CORRELATIONS BETWEEN G AND CHOLESTEROL

First, the simple correlation between G and cholesterol measurements may be considered. Gofman and others [2e] repeatedly suggest that there is little or no significant correlation and state, "For any particular patient the analytical serum cholesterol is of no value in predicting the concentration of S_f 10-20 molecules (G)." But they provide scatter diagrams of the data on 89 clinically "normal" persons and 98 patients with myocardial infarctions. For these 187 men the crude correlation coefficient between G and total cholesterol is r (coefficient correlation) $= +0.56$, with the 95% limits of probability being $+0.45$ and $+0.66$.

This estimate of correlation is minimal; it is less than the true correlation because of the fallibility of the methods. The analytical uncertainty for a single measurement of cholesterol is of the order of 5% or more, and uncertainty in the G measurement is very large indeed. The Berkeley group originally stated that the limit of resolution for G was 5 mg. per 100 ml., but personal communications indicate a considerably greater uncertainty. From the data in my own and other laboratories, it appears that the uncertainty of a single measurement is of the order of ± 10 mg. of G per 100 ml. Since 42% of the 187 values at hand for correlation analysis are less than 15 mg. per 100 ml., the effect of such random uncertainty is very large. Without acceptable reliability data, it is impossible to estimate precisely the true correlation which would be found if infallible analytical methods were available. It is clear, however, that the true relationship between G and cholesterol measurements must be considerably closer than indicated by the crude value of $r = +0.56$ and may approach the value of $r = +0.7$.

ANIMAL EXPERIMENTS

The published direct evidence that G may be a useful predictor of the degree of atherosclerosis is from an experiment on rabbits fed cholesterol with subsequent blood analysis and ultimate grading of the atherosclerosis (0 to +4) by the pathologist.[2c] From the published raw data we can calculate the correlation between the concentration of G in the serum and the degree of atherosclerosis found. The coefficient is $r = +0.77$. At the same time these data appeared (August, 1950) a very similar study was reported from Toronto in which the degree of atherosclerosis was similarly graded in cholesterol-fed rabbits and the serum cholesterol measured.[3] From these raw data I have calculated the coefficient of correlation to be $r = +0.85$.

Both of these correlations are highly significant. They show that in cholesterol-feeding experiments on rabbits both G and cholesterol measurements have value in predicting the resulting degree of atherosclerosis. With G the forecasting efficiency is indicated to be 37%, i. e., by measuring G the predicting error is reduced by 37% from that which would obtain without that information. With the cholesterol measurement the forecasting efficiency is 50%. Neither measurement is a very precise predictor, and certainly G is not better than cholesterol.

NORMAL PERSONS COMPARED WITH CORONARY PATIENTS IN REGARD TO G

The main argument for the importance of the G concentration in the serum has been the comparison of the values found in clinically healthy persons with those found in patients who have had myocardial infarctions, and hence are presumed to represent advanced degrees of atherosclerosis. The data provided [4] clearly indicate a substantial tendency for the "patients" to have elevated levels of G.

In the published articles there are no critical analyses of the material. It is not enough, for example, to show that there is a difference between the average values of G in the "patients" as compared with the "normal" persons. Since the data are greatly skewed in distribution, ordinary averages have little meaning anyway. But average differences are not the issue. What is wanted are answers to the following questions: 1. Precisely how well does the G measurement differentiate between patients and "normal" persons? 2. How does G compare with the cholesterol measurement in this regard?

THE G MEASUREMENT AS A DISCRIMINATOR

Fortunately, it is possible to reconstruct the essential raw data from the published diagrams and to proceed with an analysis from these. Even so, the analysis pre-

3. Firstbrook, J. B.: Effect of Choline Chloride on Development of Atherosclerosis in the Rabbit, Proc. Soc. Exper. Biol. & Med. 74: 741, 1950.

4. Footnotes 2b, c, and d.

sents difficulties because of major changes in calibrations from one paper to the next and because of internal inconsistencies in the data. For example, Figure 4A [2d] shows the mean values in "normal" men arranged by ages, Figure 4C compares "normal" men aged 41 to 70 with men of similar age who have had infarcts. But the two sets of "normal" men do not correspond; if Figure 4A is accepted as the standard, it would appear that the average age of the normal men aged 41 to 70 was about 40. Alternatively, it would be necessary to insist that the discrimination between patients with infarcts and normal persons is considerably less than indicated in Figure 4C. To avoid such problems I have relied solely on the scatter diagrams [2c] which show the individual data.

TABLE 1.—*Percentages of Coronary Patients and "Normal" Persons in Whom Given Values of G Concentration Were Exceeded* * †

Patients (%)	20	30	40	50	60	70	80	90
"Normal" persons (%)	6	10	14	20	26	32	42	54
D ratio	3.3	3.0	2.9	2.5	2.3	2.2	1.9	1.7

* Men 31 to 50 years.
† Calculated from raw data in Gofman and others (Figs. 4 and 5).[2c]

The material on G measurements has been analyzed in several ways for each of various age ranges. Since the results are all consistent, it is enough to consider in detail only one form of the analysis of the findings on men aged 31 to 50. A suitable beginning is to arrange the data for patients and for normal persons in arrays from lowest to highest values of G. It is then easy to find the proportions of patients and normal persons in whom any given value of G is exceeded. The results for the men aged 31 to 50 are summarized in Table 1.

Table 1 also gives the ratio between the proportions of patients and normal persons in whom particular values of G are exceeded. A value of G which is exceeded in 50% of the patients is also exceeded in 20% of the normal persons, and the discrimination at this G level is indicated by the discrimination ratio $D = 50/20 = 2.5$. The best discrimination is achieved with a level of G so high that it is exceeded in only 20% of the patients; at this level 6% of normal persons are included, and the value of D is 3.3.

It is obvious that the overlap is very great, but it might be suggested that these discrimination ratios indicate some validity for predicting coronary disease and that, for example, a blood value which is exceeded by 50% of the patients could be judged to indicate coronary disease with a probability of 2.5 to 1. Actually, this would be the case only if the population were made up of equal numbers of normal persons and persons with coronary disease. But in a random sample of adults in the United States it would be closer to reality to predict that perhaps 5 or 10% have or are threatened with coronary disease. Suppose then that a population is made up in the ratio of 9 to 1 of "normal" persons and persons with coronary disease and that a critical level for G is selected which is exceeded in 50% of the patients with coronary disease. And now suppose that G measurements are made on this mixed population of normal persons and persons with coronary disease. If there are 1,000 persons in all, i. e., 100 with coronary disease and 900 who are normal, it will be found that 230 persons ($0.2 \times 900 + 0.5 \times 100 = 230$) will have values excceding our critical level. Of these only 50 are actually coronary patients. The result is we have "found" only half of the persons with coronary disease and have erroneously diagnosed coronary disease in 180 normal persons.

This is disconcerting. Perhaps one should raise the critical value of G to the point at which it is exceeded in only 20% of coronary patients and at which the discrimination ratio is at a maximum. With this hypothetical population of 1,000 persons, it would then be found that 74 persons ($0.06 \times 900 + 0.2 \times 100 = 74$) would show G values above the critical level. Only 20 of the coronary patients would have been discovered, while 54 normal persons would have been erroneously diagnosed.

Now it may be objected that this analysis does not allow for the fact that in some of the persons who would be judged to be normal, clinically, serious atherosclerosis may be developing, and they are really threatened with coronary heart disease in the near future. Suppose that 10% of the Berkeley "normal" persons are of this sort nd that they have a distribution of serum G values identical with the coronary patients. The values in Table 1 should then be changed to those given in Table 2. Now the calculation can be repeated for a hypothetical population of 900 "true normal" persons and 100 persons who are potential patients with coronary disease. With a critical level of G which is exceeded in 50% of the nonnormal persons, a total of 200 persons ($0.167 \times 900 + 0.5 \times 100 = 200$) receive the label "coronary patients." Of these 150 are true normal persons while 50 of the actual coronary patients are missed.

This analysis could be elaborated further. For example, all the figures cited here are attended by errors which can be estimated from elementary probability theory. Allowance for the standard errors of the various proportions would still further increase the uncertainty of the predictions which can be made from the G measurements.

TABLE 2.—*Percentages of Coronary Patients and "True Normal" Persons* * *in Whom Given Values of G Concentration in Serum Are Exceeded* †

Coronary patients	30	40	50	60	70
Total normal persons	10	14	20	26	32
False normal persons	30	40	50	60	70
True normal persons	7.8	11.1	16.7	22.2	27.8
D ratio ‡	3.8	3.6	3.0	2.7	2.5

* Those not in the predisease state. It is assumed that 10% of the "total normal" persons are actually in the predisease state and that these "false normal" persons have the same serum G picture as the coronary patients.
† Calculated from data on men 31 to 50 years in Gofman and others (Figs. 4 and 5).[2c]
‡ Equals value in first line divided by value in fourth line.

The situation is no more favorable for women or for older men than for the 31 to 50 year age group considered so far. Table 3 summarizes data comparing men 31 to 50 and 51 to 60. The discrimination is poorer with the older men, as is evident from the D ratio values in Table 3.

Poor as the predictive value of the G measurement is, it is conceivable that it might be better than the measurement of cholesterol. But it is not necessary to speculate; there are excellent data for a detailed comparison.

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NORMAL PERSONS COMPARED WITH CORONARY PATIENTS IN REGARD TO CHOLESTEROL

The Boston study of Gertler, Garn, and Lerman [1e, f] covered 97 men who had had myocardial infarctions and 146 men of the same age who were clinically "healthy." In all respects these men seem entirely comparable to the 31 to 50 year old men studied at Berkeley, but the Boston workers studied cholesterol (and other items) instead of the G concentration in the serum. From the published data [1f] it is possible to construct the counterparts of Tables 1 and 2 for cholesterol values. To save space only Table 4, the counterpart of Table 2, need be considered.

Table 4 indicates that a critical level of cholesterol which is exceeded in 30% of the men known to have coronary disease will include only 3% of men labeled "clinically healthy." Moreover, if the same assumption is made about "false normal" persons as was made in the analysis of the G data, it appears that this cholesterol level would include no normal persons. A lower cholesterol level, which would be exceeded in 40% of the coronary patients, would result, with the hypothetical population mentioned earlier, in finding 41 persons

TABLE 3.—*Discrimination Between Clinically Healthy Men and Men with Coronary Heart Disease by Means of Measurements of G* *

Age	Type †	No. Men	% of Men with G ‡ 5	20	40
31-50	P	72	95.8	73.6	34.7
31-50	N	483	60.5	33.8	11.4
31-50	D	..	1.6	2.2	3.0
51-60	P	77	93.3	68.0	38.7
51-60	N	99	66.7	34.4	16.2
51-60	D	..	1.4	2.0	2.4

* Calculated from data from Gofman and others (Figs. 4 and 5).[2c]
† "P" indicates coronary patient and "N" "normal" persons.
‡ In milligrams per 100 ml. of serum. Note that these values are about 10 mg. less than are reported from the most recent calibrations.

$(0.011 \times 900 + 0.4 \times 100 = 41)$, all but one of whom would be properly labeled "coronary patient." However, this level would fail to include 60 persons with actual coronary disease. At the next lower level of serum cholesterol which would be exceeded in 50% of the coronary patients, from this same population there would be recorded 130 persons with coronary disease; 80 of these would be erroneously diagnosed.

VALIDITY OF THE ANALYSIS

It would, of course, be desirable to have for these comparisons both G and cholesterol measurements on the same men. The Berkeley group have, in fact, published [2c] (Fig. 14 and 15) data which would appear to be suitable for such a comparison of G and cholesterol measurements as discriminators between "normal" persons and coronary patients. In personal communications with Dr. Gofman it was learned that these "normal" persons and coronary patients for whom both G and cholesterol were recorded were of different ages, the "normal" persons being younger, on the whole, than the coronary patients. Because of this, Dr. Gofman objected to the idea of making a comparative analysis with these data. However, this age difference would not seem to bar comparisons of the two discriminators unless normal age trends for cholesterol and for G are substantially different. Actually, the age trends for these two variables are very similar,[5] at least to an age of about 60. Calculations of data on the age trends for healthy men for cholesterol [5a] and for G [2d] show that, with the value at age 25 taken as 100% in the case of each variable, the median "normal" values for cholesterol and G, respectively, are 109 and 109 at age 35, 128 and 128 at age 45, 139 and 143 at age 55. These close agreements indicate that the data in Gofman's [2c] (Fig. 14 and 15) may be properly used to compare the two criteria as discriminators between healthy men and men with infarctions.

TABLE 4.—*Percentages of Coronary Patients, "Total Normal" Persons, "True Normal" Persons, and "False Normal" Persons in Whom Given Values of Total Cholesterol Concentration in Serum Are Exceeded* *

Coronary patients	30	40	50	60	70
Total normal persons	3	5	13	23	33
d ratio †	10.0	8.0	3.8	2.6	2.1
False normal persons ‡	30	40	50	60	70
True normal persons §	0	1.1	8.9	18.9	28.9
D ratio ‖	Infinite	36.3	5.6	3.2	2.4

* Calculated from data on men 30 to 50 years in Gertler, Garn, and Lerman.[1f]
† Equals value in first line divided by value in second line.
‡ Those who are clinically healthy but actually in the predisease state. It is assumed that 10% of the "total normal" persons are actually in the predisease state and that these "false normal" persons have the same serum cholesterol picture as the coronary patients.
§ Those not in the predisease state.
‖ Equals value in first line divided by value in fifth line.

The principal results are summarized in Table 5. They show that this material conforms very well with the results summarized in Tables 1 through 4. Both G and cholesterol values show slightly poorer discriminations than obtained in the previous analysis. But the relationship between the discriminations obtained with the two criteria, which is the point at issue, is very similar to the result obtained in the comparison of the Berkeley and the Boston findings for men 30 to 50 years. In these Berkeley versus Berkeley comparisons the crude D ratios with G as the criterion averaged 65% of the crude D ratios with cholesterol as the criterion, i. e., the average discrimination with G was roughly two-thirds as good as with cholesterol. In the Berkeley versus Boston comparisons (see Tables 1 and 4) over the same range, the crude D ratios with G averaged 66% of the D ratios with cholesterol.

TABLE 5.—*Percentages of Eighty-Nine Clinically Healthy Men and Ninety-Eight Men with Coronary Disease in Whom Given Values of Serum Concentration of G and Total Cholesterol Are Exceeded* *

	% of Men Included				
G in coronary patients	30	40	50	60	70
G in normal men	12	19	25	35	42
G ratio	2.5	2.1	2.0	1.7	1.7
Cholesterol in coronary patients	30	40	50	60	70
Cholesterol in normal men	7	13	17	19	26
Cholesterol ratio	4.3	3.1	2.9	3.1	2.7

* Calculated from raw data given by Gofman and others (Figs. 14 and 15).[2c] The "normal" persons had a younger average age than the coronary patients.

5. (*a*) Keys, A.; Mickelsen, O.; Miller, E. v.O.; Hayes, E. R., and Todd, R. L.: The Concentration of Cholesterol in the Blood Serum of Normal Man and Its Relation to Age, J. Clin. Invest. **29**: 1347, 1950. (*b*) Gofman.[5d]

These results, then, are in agreement with our first analysis, and they also suggest that the data in Figures 14 and 15 of Gofman and others [2e] may be applied in further exploratory analyses.

COMBINED G AND CHOLESTEROL IN PREDICTION

Since cholesterol and G concentrations in the serum are by no means perfectly correlated and since each measurement has, by itself, some value in discriminating between normal persons and persons with coronary disease, it is reasonable to suggest that a combination of the two criteria could be superior to either taken alone. The only data now available to test this idea are those discussed in the preceding section of this paper. Though these have the disability of the questionable age factor, the foregoing analysis suggests that they may be suitable for exploring the question of combined criteria.

Accordingly, systematic trials were made of combinations of G and cholesterol critical levels in the general range which would include 30 to 70% of the coronary patients. For example, it was found that when a critical level was set at 20 mg. of G and 220 mg. of total cholesterol (per 100 ml. of serum), this combined criterion was exceeded by 57.1% of the coronary patients and by 23.7% of the normal persons, giving a D ratio of 2.37.

In all, 14 different combinations were tested. All of these produced better discrimination, i. e., higher D ratios, than were obtained with critical levels of G alone which included comparable percentages of the patients. On the other hand, none of these combinations surpassed, or even equaled, the discrimination obtained with total cholesterol alone.

These results would indicate that the G measurement makes no significant independent contribution to the discrimination between "normal" persons and persons with coronary disease. If the data were completely reliable, in fact, it might be concluded that the only reason G measurements have any discriminating power is because they are (imperfectly) correlated with total cholesterol. But the intention is not to insist on pushing the analysis to this limit. These trials merely indicate, again, that there is no basis as yet for ascribing any more virtue to the G measurement than to the cholesterol measurement.

COMMENT

In addition to the analyses summarized previously, the published data from the Berkeley group [2c, d] and of the Boston group [1f] have been treated and compared in several other ways, including analysis of successive deciles of blood concentration and calculation of biserial correlation coefficients.[6] Furthermore, in estimating the probable success of application of these blood analyses to individual and group diagnoses, several different assumptions were tried in regard to the frequency of recognizable and impending coronary disease.

All the findings from these various analyses were in essential agreement with the analysis previously presented. For example, the biserial coefficient of correlation was computed for the presence of coronary disease versus serum cholesterol level (in the Boston data) and versus serum G level (in the data on men 31 to 50 in Gofman [2e]). For cholesterol the biserial $r = 0.61$, S.E. (standard error coefficient correlation) $= \pm 0.08$; for G the corresponding values are $r = 0.41$, S. E. $_r = \pm 0.10$.

By making various assumptions it is possible to find bases to suggest that the predictive value of G and cholesterol measurements may be higher than indicated in the preceding sections of this paper. For example, it may be assumed that half of the "normal" persons considered here are actually atherosclerotic and are seriously threatened with coronary heart disease and that these "false normal" persons have blood concentrations of G and cholesterol which conform to the coronary patients' category. In this case the discrimination achieved by the blood analyses would be much better, i. e., it would be possible to find critical levels of G and total cholesterol which would separate true "normal" persons from actual and potential coronary patients with considerably less uncertainty. But this would not change the relationship between G and total cholesterol as discriminators; it still would appear that G is no better, and actually may be considerably worse, than cholesterol for these purposes.

Caution should be exercised in discussing—and estimating—the prediction of coronary heart disease on the basis of the presence of atherosclerosis. It is true that the great majority of adults, at least over 30, have appreciable degrees of coronary atherosclerosis. Beyond the age of 40 it may be that 50% of American men have marked degrees. This is not, however, evidence that all or most of these men will shortly die or be disabled with coronary heart disease.[7] The questions which properly should be asked are these: What percentage of these men are seriously threatened with disaster in the next year? What percentage in the next five years? How well may we predict which men? Only longitudinal studies can answer the last question with precision.

In this paper no attention has been paid to other items in the blood analysis that have been proposed as having value in detecting or predicting serious atherosclerosis. For the most part, data adequate for a reasonable analysis are not available. From such data as have been published it does not seem probable that any of them—ratio of cholesterol to phospholipids, cholesterol esters, β lipoproteins, and so forth—will prove markedly superior to total cholesterol for these purposes. But it is rash to judge on the basis of the present scanty evidence.

SUMMARY

There is substantial correlation between the concentrations in human blood serum of total cholesterol and the "giant molecules" characterized in the ultracentrifuge by —10 to —20 Svedberg Units of sedimentation (G substances). The coefficient of correlation is at least of the order of 0.6 and may be as high as 0.7. In cholesterol-fed rabbits the resulting degree of atherosclerosis is well correlated with both the concentrations of G and cholesterol in the serum, the coefficient of correlation being of the order of 0.8. There is no evidence that the concentration of G is more critical than that of total cholesterol.

6. Keys, A.: "Giant Molecules" and Cholesterol in Relation to Atherosclerosis, Bull. Johns Hopkins Hosp. **88**: 473, 1951.

7. Morris, J. N.: Recent History of Coronary Disease, Lancet **1**: 1 and 69, 1951.

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Both G and total cholesterol show distinct tendencies to be maintained in higher concentrations in the serum of persons with coronary disease than in clinically healthy persons. Neither measurement, however, is a good discriminator between such patients and healthy persons. If there is any advantage to one of these measurements over the other in detecting or predicting coronary disease, the evidence is in favor of total cholesterol. There is no evidence that a level of G concentration in the blood may be of practical value as an indicator of the probability of present or impending coronary disease.

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ORGANIC NEUROLOGICAL SYNDROMES DIAGNOSED AS FUNCTIONAL DISORDERS

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It is generally recognized that functional components may be present wherever there is organic disease, neurological or otherwise. Such functional material can at times dominate the picture to such a degree that it is possible for the physician to overlook otherwise significant signs of physical disease. This paper is not intended as a criticism of diagnostic failure. It is rather a plea for a closer working relationship between psychiatry and neurology. We hope to highlight the need for viewing the patient as a whole, interrelating physical and psychiatric problems. Limited investigation is inadequate insurance when dealing with patients. The importance of multiple examinations as well as reasonable competence in neurology must be stressed.

Over a period of several years our experience has been to note that a fair number of alleged psychiatric cases are ultimately diagnosed as neurological. We feel that there have been enough such instances to warrant a neurological unit within a psychiatric service. Thus, it has been our good fortune, as a result of initial neurological surveys of all patients and follow-up examinations, to discover definite neurological disorders, at times quite unexpectedly. All the cases in this series identified as neurological were diagnosed by physicians of our neurological unit in the course of such routine studies and follow-up examinations.

We must point out that we are dealing with veterans currently under treatment in a Veterans Administration clinic. The recorded diagnoses are based on initial findings at the time of development of symptoms in military service as well as signs and symptoms demonstrated by further examinations after leaving military service. We feel that the results of our survey are just as applicable to private and civilian types of practice. In fact, most of these patients have had much contact with private general practitioners as well as private psychiatrists.

As a result of our experience, it is now standard procedure for all patients, regardless of diagnosis, to have a thorough neurological examination shortly after arriving at the Mental Hygiene Clinic. If the patient is under treatment for any extended period of time, he receives a "repeat" neurological as well as a general physical examination annually, unless during the course of treatment he has shown some suspicious signs which warrant an earlier neurological or other medical review.

REVIEW OF CASES

A total of 395 neurological cases were reviewed. Three hundred forty-two cases were correctly diagnosed early in the course of the syndromes. However, there were 53 cases (or 13.4%) incorrectly diagnosed for varying lengths of time prior to an eventual change to a definitive neurological diagnosis. Figures are given on the length of time these cases were handled as psychiatric before a change of diagnosis was established by neurological examinations (Table 1). The largest number of cases were considered functional for a period of two to six years before a change of diagnosis was made. We have a mean of 4⅕ years, with the greatest number of cases (17) handled as functional for four years. In these cases all the patients were given psychotherapy at one time or another

TABLE 1.—*Duration of Time Carried as Psychiatric Prior to Change to Neurological Diagnosis*

Yr.	No. of Patients
8	1
7	2
6	7
5	10
4	17
3	9
2	6
1	1

for varying lengths of time, and most of them had had contact with more than one psychiatrist. The psychiatrists concerned were Veterans Administration clinic psychiatrists, contract clinic psychiatrists, as well as private panel psychiatrists.

During this period in many of these patients the neurological disorder was undoubtedly progressing to a point where the correct diagnosis could be made with greater

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facility. It may also be true that in some instances, with our limited armamentarium for treating certain neurological disorders, the delay in diagnosis perhaps did not make too much difference therapeutically. Nevertheless, we are also dealing with such conditions as Parkinson's syndrome, expanding lesions of the brain, epilepsy, Ménière's syndrome, herniated disc, and so forth, which can be treated and the needless distress alleviated by proper care. It is not inconceivable that a patient's life, in some instances, could be considerably prolonged if his disorder, as in the case of a brain tumor, were correctly diagnosed at an early stage.

TABLE 2.—*Nature of Psychiatric Diagnosis Prior to Change to Neurological Diagnosis*

Conversion reaction or hysteria	17
Mixed or unclassified neurosis	11
Neurasthenia or hypochondriasis	10
Anxiety reaction	10
Somatization of one type or another	8
Psychopathic personality	5
Dementia praecox	2
Anxiety hysteria	1
Obsessive-compulsive neurosis	1

Some of the psychiatric diagnoses used for these patients prior to change of diagnosis are listed (Table 2). In some instances a single patient was diagnosed differently by different psychiatrists. Thus, it was not unusual to find that a patient over a period of four years might have two or more diagnostic classifications. The frequency of the diagnosis of conversion or hysteria is worth noting.

The patients have been divided for convenience into three groups, A, B, and C (Tables 3, 4, and 5). Group A consists of those patients who are seen most frequently in the clinic and group B of those who are observed less frequently. Group C consists of those patients correctly diagnosed initially. In Table 3 it is worth noting that the highest percentages of incorrect diagnosis appear in the categories of Parkinson's syndrome, multiple sclerosis, and expanding lesions of the brain. We feel that, particularly with the first two, functional signs of one type or another are extremely frequent as precursors of organic disease and may very well be part and parcel of the total disease process as well as a personality reaction to the disease. The sampling of cases of individual disease entities in Table 4 is limited in number but points to a potentially high proportion of functional diagnosis prior to establishment of correct neurological diagnosis. In most of the disorders listed in Table 5, there is an acute onset and obvious clinical signs early in the course, so that diagnosis tends to be made with greater facility. The other conditions, such as endocrine disturbances, neurofibromatosis, and so forth, tend to be easily diagnosed in most instances.

TABLE 3.—*Commonest Neurological Syndromes (Group A)*

	No. Cases	No. Correct Diagnosis	No. Labeled Psychiatric Prior to Change of Diagnosis	% Incorrect Diagnosis
Parkinson's syndrome	30	18	12	40.0
Multiple sclerosis	30	20	10	33.3
Expanding lesions of brain	13	9	4	30.7
Herniated disc	29	24	5	17.2
Neuritis and neuralgia (21 of traumatic origin)	46	43	3	6.5
Idiopathic epilepsy	157	148	9	5.7

COMMENT

Parkinson's syndrome, multiple sclerosis, expanding lesions of the brain, and herniated disc, of the commoner neurological syndromes seen in this clinic, showed the highest percentage of cases considered to be functional, prior to clarification of the diagnosis. Other conditions, seen less frequently, about which functional diagnoses were made, include such varied diseases as syringomyelia, spinal cord tumor, primary lateral sclerosis, amyotrophic lateral sclerosis, Raynaud's disease, myotonia atrophica, and so forth. Of 157 cases of epilepsy, 148 were correctly diagnosed. Only nine (or less than 6%) were incorrectly diagnosed and handled as psychoneurotic until epilepsy was eventually verified by means of abnormal electroencephalograms and the witnessing of bona fide seizures. It is true that in cases of so-called idiopathic epilepsy a neurological examination is generally not productive of abnormal findings.

TABLE 4.—*Less Common Neurological Disorders (Group B)*

	No. Cases	No. Correct Diagnosis	No. Labeled Psychiatric Prior to Change of Diagnosis
Neurosyphilis	5	4	1
Peripheral vascular diseases	6	..	..
Thromboangiitis obliterans	..	5	..
Raynaud's disease	..	..	1
Muscle diseases	6	..	..
Muscular dystrophies	..	4	..
Myasthenia gravis	..	1	..
Myotonia atrophica	..	..	1
Arteriosclerosis and other vascular brain diseases	10	9	1
Spinal neoplasm	3	2	1
Amyotrophic lateral sclerosis	3	2	1
Syringomyelia	3	2	1
Encephalitis	3	2	1
Primary lateral sclerosis	1	..	1
Ménière's syndrome	1	..	1

TABLE 5.—*Disorders Correctly Diagnosed Initially (Group C)*

	No. Cases
Radiculitis	27
Transverse myelitis	6
Meningitis	7
Poliomyelitis	1
Neurofibromatosis	2
Internal hydrocephalus	1
Osteoma of the skull	1
Endocrine disturbances:	
Thyrotoxicosis	2
Fröhlich's syndrome	1
Myxedema	1

In some instances organic disease was suspected for some time, though the case continued to be labeled "neurosis." Clarification of organic disease was not established until the disease had progressed much farther. It is possible in many such cases that early in the disorder enough concomitant psychiatric symptoms may be present to mask the organic picture, frequently causing a psychiatric diagnosis.

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It is our impression that so-called functional symptoms of a neurotic nature occur more readily as precursors of organic disease in certain conditions such as Parkinson's syndrome or multiple sclerosis. We believe that neurotic traits in such patients, having existed prior to onset of neurological disease, are accentuated in the early stages of the neurological disorder, and possibly aggravated later as the disease progresses. A neurologically disabled patient is faced with conditions requiring adjustment which may be beyond his capacity. Emotional or even mental symptoms may result from activation of unconscious conflicts, which until then had been under control. This may account for what is often described as psychogenic overlay in many physically ill patients, neurological or otherwise. Braceland and Giffin [1] in their paper on multiple sclerosis and Brenner, Friedman, and Merritt [2] in their work on basal ganglia syndromes were impressed with the variability of psychiatric symptoms and personality organizations among their cases. With this we are in complete accord.

It is probably true that many cases, had they been studied by trained neurologists, might have been correctly diagnosed earlier in the course of the disease process, though it is worth commenting that neurologists, too, are not infallible. To simply say that a patient has had a neurological check-up somewhere along the line is not sufficient proof that there has been real neurological clearance. Unfortunately, most psychiatrists, as well as most other specialists, are not adequately trained in neurological examination and interpretation of neurological signs. We believe that the nearly 14% of cases considered to be functional for periods averaging more than four years prior to establishment of a neurological diagnosis warrants the establishment of a neurological unit in a psychiatric clinic.

CONCLUSIONS

All patients, before acceptance for psychotherapy, should have a thorough neurological survey in order to rule out or establish organic disease. When neurological disease is suspected, though psychotherapy may be in progress, patients should be reexamined at regular intervals. Adequate training in clinical neurology for psychiatrists should not be an academic issue. It has practical value for both psychiatrist and patient. Needless waste of time, effort, and money can be reduced to a minimum by the approach described in this paper. Psychotherapy, when indicated for neurological cases, can be more definitive, since more precise knowledge as to which part of the picture is organic and which is psychogenic would be available. The establishment of a neurological unit in a psychiatric service is justified.

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EVALUATION OF PSYCHOGENIC SYMPTOMS IN GENERAL MEDICINE

USE OF MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

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The role of the psyche in the production of somatic symptoms is under vigorous discussion in modern medical literature. In its evaluation the physician has relied heavily on his instinct of understanding, which is a nebulous and variable faculty. If this subjective method could be replaced by objective evaluation, diagnosis in this field might be simpler and patients needing psychiatric evaluation might be recognized more accurately. In view of the need for objective evaluation of the emotional factors in the illnesses of patients presenting themselves to the diagnostician, I began using the Minnesota Multiphasic Personality Inventory, a psychometric test, as an experimental procedure in private medical practice. This test is a new tool, designed to record neurotic attitudes, which may help to sort out more accurately the patients with nervous symptoms who require psychiatric aid from those who can be managed by the general physician. The object of the present study is to analyze the practical results of use of the test with 70 patients.

DESCRIPTION OF TEST

Hathaway and McKinley [1] published the details of their Minnesota Multiphasic Personality Inventory in sections from 1940 through 1948. They reported in 1943 on the use of this test among psychoneurotic patients in general medical practice.[2] The device as recommended for clinical work consists of a box containing 550 cards with one psychologically significant statement printed on each card. The patient sorts these statements into three groups designated True, False, or Cannot Say, as he considers them applied to himself (Fig. 1). After the

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cards have been sorted by the patient, the responses are recorded and scored by a clerk (Fig. 2). The test scores relate to nine categories: hypochondriasis, depression, hysteria, psychopathic personality, masculinity-femininity, paranoia, psychasthenia, schizophrenia, and hypomania. The significance of responses to the statements on

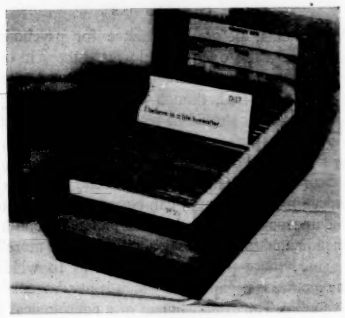

Fig. 1.—Box containing cards with psychologically significant statements to be sorted by patient

the cards was developed by extensive comparison of the responses of presumably normal persons with the responses of patients who had been studied and given diagnoses by the psychiatric staff of the University of Minnesota Hospitals.

REVIEW OF LITERATURE

Much has been written since 1940 on the use of the inventory. McKinley and Hathaway [2] emphasized the use of the method in general medical or surgical practice as an aid to the physician in sorting out neurotic patients and in evaluating neurotic states in patients with organic disease.

In a careful comparative study of personality questionnaires in general, Ellis [3] concluded that this test appeared to be the most promising, because its derivation was on an objective basis. Leverenz [4] gave the test to 76 neurotic patients who had been given psychiatric diagnoses prior to testing. The results corroborated the clinical diagnosis in approximately 95% of these cases. Using similar methods, Benton [5] secured less frequent agreement but concluded that the test was satisfactory in distinguishing psychopathic deviates and homosexual patients. It was less successful in his hands in distinguishing patients with hysteria and schizophrenia. Modlin [6] tested 500 persons to evaluate the device. He found poor correlation between the clinical diagnosis and the highest score on the inventory for a given subject, but very good correlation when the clinical diagnosis was sought among the four highest inventory scores for that person. He emphasized that single abnormal categories on the test were not so significant as the whole test profile. Michael and Buhler [7] stated that the inventory does not replace interviewing and psychiatric judgment.

Various phases of behavior have been studied by the test. Hewitt [8] used it in testing 37 members of Alcoholics Anonymous. He concluded that deep-seated personality disorders were common among this group, the most prominent being the psychopathic deviate, but that alcoholism is also often associated with neurotic, paranoid, or schizoid trends. In a study of adaptation of army officers, Abramson [9] concluded that there was some correlation between high scores on the inventory and lack of adaptation.

A relatively small number of case reports deal with the use of the test by physicians outside the psychiatric field. Houk,[10] in a series of case reports selected from 100 inventories in private practice, concluded that it affords valuable aid in recognizing neurotic patients and in supporting a clinical diagnosis. Henderson and his coworkers,[11] in an experimental study of dietary restriction, used the inventory to evaluate changes in emotional status in their subjects. They reported changes in the neurotic scales on the test when the subjects were on deficient diets. These changes were substantiated by the clinical impressions of observers. Brozek and his colleagues [12] used several devices, including the inventory, to study personality during experimental vitamin B-deficient diets. No change in personality was recorded on any tests with patients on partially restricted diets, but when patients were placed on diets with severe food restriction, striking deterioration was shown by all tests used. Deterioration as shown by personality tests preceded metabolic, cardiovascular, and neurological changes. In a study of persons with prolonged symptoms

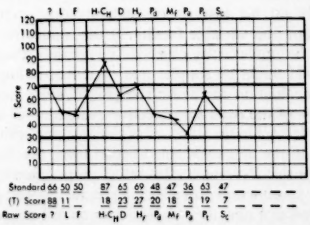

Fig. 2.—Recording sheet showing test scores in nine categories and total personality profile.

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following head injuries Ruesch and Bowman [13] found two features common to the group: abnormal scores on the neurotic scales of this test and large numbers of diffuse complaints. They concluded that social maladjustment is related to accident proneness and to delayed recovery. The inventory was used in conjunction with interviews by Ruesch and his colleagues [14] to study personality in patients who had undergone thyroidectomy. Surgery had been well tolerated by those with stable personalities, but recovery from surgery was poor in patients giving evidence of hysteria or anxiety. Walch and Schneider,[15] using the test on 550 private patients, found it a valuable aid in identifying and measuring personality deviations and stated that it is helpful in discussing diagnosis with the patient.

PROCEDURE

In our study the test was given to patients in whom it was suspected that subconscious stress (neurosis) was producing symptoms. A much larger number of patients who presented diagnostic problems during the period of this study were not given the test because the diagnosis of neurosis seemed unlikely. In many of these the symptoms were due to nervous tension, but the sources of stress seemed clear and the question of deep personality disorders was not raised.

The case histories in the patients given the Minnesota Multiphasic Personality Inventory are compared as to the final clinical and psychometric diagnoses. The data are further broken down to show the various neurotic categories encountered, the presenting symptoms, and the sources of stress.

DEFINITION OF TERMS

For clarity several of the terms used here must be defined. The term "reactive neurosis" is used to apply to the patient whose symptoms were due to thoughts or environmental situations that were emotionally overstimulating. Such patients are exemplified by the woman who had learned to fear her mother's asthma over many years and who then recognized asthmatic symptoms developing in herself. The ensuing anxiety led to additional distressing symptoms. Other patients had experienced symptoms reminding them of coronary heart disease or other physical disease and had developed additional symptoms from the anxiety thereby produced. Several patients were living in uncongenial environments that were so irritating in various ways that symptoms resulted. In each of these instances the symptoms of nervous origin can be considered as being largely a reaction to stimuli of which the patient is aware.

The term "neurosis," when used unqualified by the adjective reactive, is applied to nervous or emotional tension arising from subconscious conflict. These patients are unable to identify the opposing forces in such conflict, because these forces are buried or suppressed.

In evaluating the subjects of the present study several patients were found whose symptoms seemed to arise from inherent hypersusceptibility to minor stimuli. Some of these patients gave evidence of being highstrung and nervously overresponsive. Such persons have often been classified as constitutional inferiors or psychopathic inferiors. In the terminology used here persons in this group are called the constitutionally susceptible.

It has long been recognized by physicians that organic disease will in many instances markedly alter the emotional reactivity of the patient. Nine of the patients in this study were believed to fall in this category. In these patients the nervous symptoms prior to the onset of disease were not excessive. The presence of organic disease lowered the threshold of nervous system response, permitting symptoms of emotional origin to arise.

RESULTS

Thirty-four patients, or about 50% of these subjects, had personality profiles that were rather abnormal (Table 1). For 25 of these and in an additional 2 with normal scores the symptoms seemed to relate primarily to subconscious conflict (neurosis). In the remaining nine patients who obtained abnormal scores it was concluded that the symptoms were produced by factors other than or in addition to subconscious conflict. It will be seen from Table 1 that five were included under neurosis with organic disease, two under reactive neurosis, and one each under constitutional susceptibility and organic disease. Fourteen subjects discussed conscious problems or conflicts that seemed adequate to produce symptoms. These patients were classified under reactive neurosis.

TABLE 1.—*Diagnosis Compared with Scores of Seventy Patients on the Minnesota Multiphasic Personality Inventory*

Diagnosis	M. M. P. I. Score	
	Normal	Abnormal
Nervous tension from		
Subconscious stress (neurosis)	2	25
Conscious stress (reactive neurosis)	12	2
Constitutional susceptibility	8	1
Organic disease	8	1
Neurosis with organic disease	0	5
Unestablished	6	0
Total	36	34

Twelve of them had normal scores. In nine patients chemical changes (climacteric) or constitutional nervous lability seemed to explain the symptoms. In another nine, organic disease was present that was assumed to have lowered the threshold of nervous reactivity sufficiently to permit development of nervous symptoms. In a few patients (five) an abnormal profile and organic disease coexisted, each being presumably responsible for part of the symptom production. The charts of six patients allowed no satisfactory conclusion as to the cause of nervous symptoms. In these patients the profiles were normal, no stressful factors were evoked, no organic disease was found, and no evidence of constitutional susceptibility was noted. Psychiatric study might have given further insight into these patients but was not carried out.

In the 34 abnormal profiles obtained in this study, the great majority show elevations in the neurotic triad of hypochondriasis, hysteria, and depression, the most frequent abnormality being depression (Table 2). Single categories are recorded as abnormal 70 times. Eleven

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subjects had abnormal scores on only one category, the majority on more than one, 10 patients on three or more. Several patients with high scores in neurotic categories obtained abnormal but less marked deviations on psychotic or behavior categories also. Two patients were unable to complete the test because of mental confusion; one was severely psychotic, the other had intracranial tumor. Psychotic-type profiles were encountered infrequently. Neurotic patients were classified according to the type of symptoms presented (Table 3). Pain of one kind or another was the presenting complaint in by far the largest number, with fatigue and nervous tension occurring frequently. The large majority experienced pain in one or more areas and also complained of general symptoms or other organ symptoms, representing the wide variation in reacting organs, with each person responding to nervous tension in his own particular way.

A smaller number of patients had a diagnosis of reactive nervous states. The threats to which these patients reacted were found to fall into certain categories (Table 4). Some of them had undergone experiences that

TABLE 2.—*Abnormal Scores of Thirty-Four Patients by Categories*

Patients showing neurotic scores		27
Hypochondriasis	14	
Depression	17	
Hysteria	16	
Psychasthenia	8	
Total neurotic scores	55	
Patients showing psychotic scores		3
Paranoia	3	
Schizophrenia	2	
Hypomania	4	
Total psychotic scores	9	
Patients with behavior disorder		2
Psychopathic deviate	4	
Masculinity-femininity	2	
Total scores behavior disorder	6	
Unable to complete test		2

aroused the suspicion in their minds that they had physical disease of serious import. In these patients the simple explanation that such disease could be disproved afforded satisfactory relief. In others the nervous symptoms arose as reactions to the presence of undesirable physical disease. It is apparent that conditions such as epileptic seizures, rheumatic heart disease, or disabling asthma may produce in many persons insecurity and frustration that result in symptoms. For these persons also, discussion leading to understanding of the relationship between symptoms and the emotional reaction to the disease was all that was required in therapy of the nervous symptoms. A third source of emotional stress in the group with reactive neuroses was environmental. These persons were reacting to situations and to personal relationships that were intolerable but from which they could not escape. They reacted emotionally to definable situations that threatened their existence or their stability.

Another diagnosis that was made occasionally was that of constitutional overreactivity. It became apparent that certain patients had normal emotional attitudes (with normal scores on the inventory) and were not reacting to overstimulating environments, yet were experiencing symptoms of nervous origin. The climacteric, both female and male, is one obvious possible cause of such oversusceptibility to vegetative nervous reaction. Several charts contained notations regarding the physical examination that indicated that the subject seemed to have an intense or sensitive personality. Little

TABLE 3.—*Symptoms of Twenty-Seven Neurotic Patients*

Patients with physiological overactivity of one or more organs		21
Pain	19	
Abdominal	8	
Skeletal	8	
Head	2	
Throat	1	
Palpitation	2	
Constipation	2	
Weight loss	2	
Fever	2	
Dyspnea	2	
Itching, blinking, blushing, belching, body odor, nausea, Raynaud's phenomenon	1 each	
Patients with general physiological overactivity		19
Fatigue	9	
Nervous tension	8	
Weakness	2	
Sense of struggle, malaise	1 each	
Patients complaining of mood variation		9
Depression	6	
Anxious, distractible, self-conscious	1 each	

mention has been made in the general medical literature of the fact that human beings are not constructed alike in nervous reactivity. One may require relatively strong stimuli to produce responses; another may react to the slightest stimulus, such high reactivity representing a prominent inherent characteristic. It is just as important therapeutically to recognize the skittish person as to recognize an organic disease, for only by such recognition is that person enabled to adjust his life to the requirements of his nervous system. In four of nine patients with a diagnosis of constitutional susceptibility to nervous reaction, the overreactivity was due to the climacteric, in three to constitutional nervous irritability, and in two others to an intense personality.

In the evaluation of nine patients (Table 5) it was considered that symptoms of nervous origin resulted from the lowered threshold of reactivity produced by

TABLE 4.—*Reactive Nervous States and Sources of Stress in Fourteen Patients*

Patients with unacceptable physical disease		5
Epilepsy	Coronary disease	
Rheumatic heart	Multiple minor abnormalities	
Asthma		
Patients falsely believing themselves subject to physical disease		3
Fear of cardiac disease (2)		
Fear of hyperthyroidism		
Patients living with stress-producing problems or environments		6
Excessive responsibility	Wayward son	
Excessive hours of work	Death of parents	
Unwanted child	Uncongenial work	

organic disease. Two of these patients had intracranial tumors, three had disorders of the circulatory system, and three patients had arthritis, duodenal ulcer, and respiratory tract infection, respectively. Patients with polycythemia notoriously are subject to vague general malaise. The swollen aching leg of the patient with phlebitis may be a constant source of nervous irritation. Low-grade chronic infections, such as brucellosis and tuberculosis, recognizably lower susceptibility to emotional

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reactivity. Brain tumor, through the constant aggravating head pain as well as by direct tissue pressure or infiltration, is well recognized as commonly producing symptoms of nervous tension. As for hypertension, peptic ulcer, and arthritis, there is controversy as to whether the nervous symptoms are secondary to the disease or the disease is due to a disturbed emotional state. Regardless of origin, nervous symptoms are commonly observed in these patients.

In the five patients revealing both organic disease and an abnormal score, the presence of neurosis in addition to the physical disorder would probably have gone unrecognized. The nervous symptoms would have been considered a part of or secondary to the disease state, and no further therapeutic efforts would have been made. The findings of an abnormal profile caused these patients to be referred for psychiatric interview and treatment.

Two patients who were regarded as neurotic after psychiatric interview showed normal scores. These represent obvious failures of the test to record the neurotic attitudes. Four patients with abnormal scores were, in the final evaluation, considered to have nervous symptoms from causes other than neurotic attitudes. Two of these were thought to be reacting to environmental stress, one to be constitutionally susceptible, and one to have nervous symptoms from organic disease. Psychiatric interviews were not conducted with these patients, as it was not considered essential to therapy. Confirmation or refutation of the test results is not therefore available in these patients.

TABLE 5.—*Organic Disease Responsible for Nervous Symptoms in Nine Patients*

Nervous system disease (Brain tumor 2, uncinate fits 1)...	3
Circulatory system disease (Hypertension, polycythemia, phlebitis)	3
Arthritis	1
Duodenal ulcer	1
Infection	1

COMMENT

In the evaluation of the causes of symptoms presented by a patient to the physician, much reliance has been placed on what is commonly spoken of as the "art of medicine." Step by step the art of earlier generations of physicians has been replaced by the science of medicine, to the advantage of both the patient and the physician. In recent years understanding of the psychological aspects of disease has been developing rapidly. This understanding has reached the point at which it is possible to develop an objective approach to the analysis of personality deviations.

The advantage to the physician of an ability to evaluate personality traits is obvious. Functional symptoms frequently simulate organic disease. Many abnormal personalities are extremely difficult for those untrained in psychiatric methods to recognize. Several patients with normal scores were believed at first examination to be suffering from a neurosis. With further study of these patients we have learned of environmental circumstances which are, for that patient, unbearable. The patient with a normal emotional balance who has symptoms as a result of conflict with the environment is a patient whom every physician, equipped only with common sense and understanding, can advise. The patient with a pronounced emotional imbalance due to conflict within the personality is usually beyond the ability of the physician to evaluate, much less to manage with benefit to the patient. Such inner conflict arises frequently from failure of emotional growth at various stages of personality development. Much psychiatric insight is required to evaluate such growth failures. The day has long since gone when the well-intentioned physician could, when a physical examination has given normal results, tell the patient to "go home and forget it."

As a result of this study my diagnostic evaluation of psychosomatic states has been greatly improved. In patients whose complaints would previously have been diagnosed vaguely as functional disorders the origin of nervous tension can now be recognized frequently. In patients with abnormal scores the physician is given strong supporting evidence for a diagnosis of neurosis or psychosis. In patients obtaining normal scores the physician will be encouraged to seek other causes for the symptoms, in additional study for organic disease, in further evaluation of the patient's ideological stresses, or in estimation of his inherent susceptibility to psychosomatic reaction. This has given rise to better sorting of patients for psychiatric reference and better insight into the simpler psychosomatic problems by patient and physician, leading to more satisfactory results in therapy.

During the collection of these data I was surprised to see the paucity of psychotic scores. Other clinicians have since reported similar impressions. The psychotic patient does not seek out the physician nor does he experience the distressing physical manifestations presented by the neurotic.

Perhaps the greatest advantage of a psychometric device to the physician untrained in psychological medicine is the fact that just as laboratory data simplify the diagnosis of other diseases, so may a psychometric procedure simplify the diagnosis of a psychogenic state. The laboratory data themselves do not diminish the need for clinical judgment but provide objective data on which judgment may be based. The Minnesota Multiphasic Personality Inventory similarly will not of itself diagnose a patient's psychological condition, but it will relate the patient's personality characteristics to clinical psychiatric entities, giving the physician additional data on which to base a diagnosis. To approach an accuracy in the diagnosis of a neurosis comparable to that provided by the test would require considerable special training in psychiatry and at least an hour's searching conversation with every patient.

SUMMARY AND CONCLUSIONS

Seventy patients from a private medical practice whose symptoms suggested neurotic illness were given the Minnesota Multiphasic Personality Inventory to evaluate the use of this device as an aid in diagnosis. The scores of these patients were tabulated according to final clinical evaluation. The original impression of neurosis was confirmed in 27 patients, was present in addition to organic disease in 5, and was denied in 38. In the latter group the causes of nervous symptoms were found in stressful environments, constitutional susceptibilities, or lowered nervous thresholds produced by organic disease.

Further data are given on the scores of the 27 patients with neurosis. The scores were abnormal mainly in the categories of depression, hypochondriasis, or hysteria in various combinations. Patients with psychosomatic symptoms are seldom psychotic. The commonest symptom of neurosis in these patients was pain, with fatigue and nervous tension rather common. A very wide range of organ reactivity is noted, each patient responding to emotional stimulation with the reaction of particular organs characteristic of him.

For those patients whose symptoms are produced by subconscious stress (neurosis), psychiatry offers a useful adjunct in treatment. For patients whose nervous symptoms are not of this type, the general physician's insight will usually be sufficient. The Minnesota Multiphasic Personality Inventory affords the diagnostician a tool as useful in the diagnosis of neurosis as laboratory aids in the diagnosis of organic disease.

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CONTROLLED VERSUS FREE DIET MANAGEMENT OF DIABETES

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and
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The type of treatment and the degree of control of the diabetic state most desirable for optimal management of youthful patients with severe diabetes has long been the subject of much debate. That the duration of diabetes is an important factor in determining the incidence and severity of degenerative vascular lesions among diabetic patients is a well accepted fact. However, our experience has led us to believe that continuous, aggressive treatment directed toward maintaining physiologic conditions, including normal levels of blood sugar, is of the greatest importance in reducing the incidence and severity of degenerative complications.

Several recent articles have advocated a regimen of management which by our standards falls far short of being adequate therapy.[1] These plans of treatment, in general, allow a more or less free selection of food and disregard of hyperglycemia and glycosuria as long as frank symptoms and acidosis are absent. Many factors must of necessity be considered in any over-all evaluation of the status of control of any individual patient. It is our opinion that "ideal" control of diabetes implies that a measured diet providing adequate amounts of vitamins, minerals, and calories derived from a correct proportion of carbohydrate, protein, and fat, has been so well utilized by means of an adequate insulin effect that blood and urine tests made regularly are invariably normal.

During a study recently completed,[2] the correlation between the degree of control maintained and the incidence and severity of degenerative vascular complications was determined in more than 300 youthful patients with diabetes of long duration who were recalled to the office or the hospital for observation and examination. Analysis of the results of this study has supplied support for the concept that persistent aggressive treatment of diabetes will definitely postpone or prevent vascular complications in these youthful patients. The present paper presents a further analysis of the data in these patients with special reference to their over-all type of management.

We have divided 221 of these patients into three groups, according to the type of treatment and the degree of control that each patient followed in the management of his diabetes. All patients who had had diabetic coma on one or more occasions, regardless of the cause or the type of management followed at other times, were considered as a group illustrating poor control and are referred to hereafter as the "coma" group. With few exceptions, the patients in this group had had consistently poor control of diabetes. All patients who actually followed the type of careful treatment recommended to them by us and our associates were similarly considered together as a group representing "controlled" treatment. The third group comprised those patients who, on their own volition, had followed a "free-diet" regimen of management similar to that advocated by Tolstoi and others. None of the 100 cases included in this third group had ever been in coma or severe acidosis as determined by a review of their clinical and laboratory records covering years of office and hospital visits. All were taking insulin in amounts varying from 30 to 120 units daily and were following a free-diet type of management, without regular examinations for sugar in the urine or blood. In these patients hyperglycemia and glycosuria were usually present whenever occasional tests were made. Each of the three management groups was further subdivided according to the duration of the diabetes into 10 to 15-year group, 15 to 20-year group, and 21 to 34-year group.

After establishing the above-mentioned groups we sought to determine in this series of patients the incidence and severity of the two most commonly observed vascular complications of diabetes which can be objectively evaluated, retinopathy and calcification of peripheral arteries. Other degenerative changes were observed with considerable frequency in many of these same patients, but the accurate interpretation and evaluation of these complications (except for renal involvement) was diffi-

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cult and the changes were therefore not easily subjected to statistical analysis. Diabetic retinopathy was found to be one of the earliest degenerative lesions constantly observed in these young diabetic patients. The various objective findings of certified ophthalmologists after funduscopic examinations were classified as follows:

Normal: Normal fundi with no hemorrhages, exudates or sclerosis.

Grade I: Few tiny punctate hemorrhages, no exudates.

Grade II: Many punctate hemorrhages, few small hard or soft exudates.

Grade III: Many punctate and some large superficial hemorrhages, many large and small exudates.

Grade IV: Most advanced retinitis with new vessel formation and proliferation (retinitis proliferans).

Calcification within the walls of blood vessels often is not demonstrable by roentgenography until after other manifestations of vascular degeneration are observed. When seen, however, this finding affords definite objective evidence of blood vessel involvement by the degenerative process. The roentgenograms of all these patients were evaluated and graded (normal to Grade IV) according to degree of vascular calcification observed in films of the aorta and of the pelvis and legs.

OBSERVATIONS

The incidence and extent of vascular calcification is correlated in Figure 1 with the type of management followed and the duration of diabetes. It can be seen that after 20 or more years, 74% of the patients in the coma group showed calcification of advanced degree and 80% of those in the free-diet group showed advanced lesions. On the other hand, among those in the controlled group there was a strikingly lower incidence of advanced changes (44%). Within each of the three groups there was an increasing incidence of vascular calcification with increasing duration of diabetes.

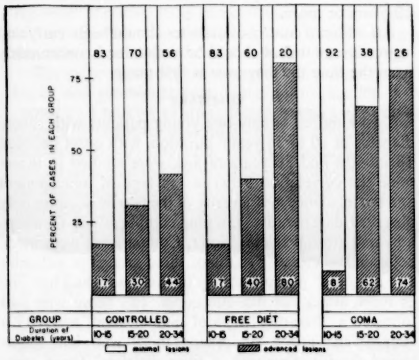

Fig. 1.—Correlation of the incidence and severity of vascular calcification with three types of management of diabetes.

In Figure 2 the incidence and severity (minimal or advanced) of retinopathy are shown in the three groups of patients. Within each group separate tabulation is made to show the effect of duration of diabetes. It will be noted that after 15 years of diabetes there was a higher incidence of retinal lesions in patients in the coma and free diet groups than in those in the controlled group. Except for the controlled group, with increasing duration of diabetes there was a corresponding increase in degree of retinitis.

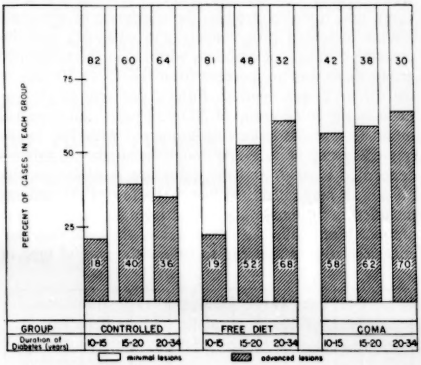

Fig. 2.—Correlation of the incidence and severity of retinal lesions with three types of management of diabetes.

Joint Correlation of Retinopathy and Vascular Calcification with Type of Management.—In analysis of the data just presented it became evident that in certain patients retinal lesions were minimal or absent, although definite vascular calcification was observed; in other patients, the reverse was seen. It appeared that more accurate tabulation and fairer comparison of the three groups of patients could be made if the patients were grouped according to the consistency of the degenerative lesions observed. Three groups were established: (*a*) "Minimal," which included all patients with retinopathy or vascular calcification of no greater severity than Grade I; (*b*) "Advanced," which included those with either Grade IV retinopathy or Grade IV calcification, or with both complications of Grade II or greater; and (*c*) "Intermediate," which comprised patients with inconsistent severity of lesions. The results of this tabulation are shown in Figure 3.

It will be noted that the data in Figure 3 are presented somewhat differently from those in the two preceding figures. The basic arrangement is according to duration of diabetes with three groups recognized: 10 to 15-year, 15 to 20-year, and 20 to 34-year group. Within each group the extent of retinopathy and calcification jointly present is tabulated according to the three types of management previously discussed (coma, free-diet, and controlled).

Study of Figure 3 reveals the following: (*a*) Within the 10 to 15-year and 15 to 20-year periods, there was no significant difference in the incidence of advanced degenerative lesions among the three management groups. However, in the 20 to 34-year period a significantly higher incidence of advanced lesions was seen among the patients with poorer control. (*b*) Among the patients with diabetes of 20 to 34 years' duration, advanced lesions in both the eyes and blood vessels were

observed more than twice as frequently in the coma and free-diet groups as in the controlled group. Also, in the group with diabetes of 20 or more years' duration, only 7% of patients managed by a free-diet regimen had minimal vascular complications, whereas 41% with controlled diabetes showed only minimal lesions. (*c*) In the coma and free-diet groups, the incidence of advanced lesions increased progressively and strikingly with increasing duration of diabetes, whereas in the controlled group there was no increase from the 15 to 20-year to the 20 to 34-year period. Fifteen per cent of the patients in the coma group of 20 to 34 years' duration had minimal vascular lesions as compared with 7% in the free-diet group (Fig. 3). Although the number of patients concerned is small and the difference possibly not significant, it may reflect the fact that a few of the patients included in the coma group had been in coma on only one occasion while the remainder of the time they had conscientiously attempted to follow the careful type of

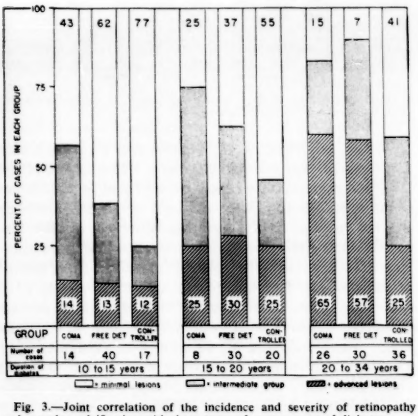

Fig. 3.—Joint correlation of the incidence and severity of retinopathy and vascular calcification with three types of management of diabetes.

treatment recommended to them and had been fairly well controlled for years; these now showed minimal, if any, vascular degeneration. This represents a vastly different situation from that of patients who maintained a persistent hyperglycemia and glycosuria and therefore a constantly disturbed metabolism under the free-diet regimen of management.

No patient who followed a free-diet type of management had both normal retinas and absence of calcified blood vessels after 20 or more years of diabetes.

Relationship of Nephropathy to Type of Management.—In addition to the complications of retinopathy and vascular calcification analyzed above, the incidence and severity of renal disease occurring in these same patients were noted with particular attention directed to the relationship between this complication and the type of management of diabetes. Sixty-two patients had clinical manifestations of diabetic nephropathy. A study of this group has been reported recently.[3] None of the 73 patients who had consistently maintained a satisfactory degree of control of diabetes was observed to have manifestations of nephropathy. Only 13 (20%) of the 62 patients with renal disease had made any attempt at control of diabetes. The remaining 49 patients (80%), had followed a free-diet form of treatment or had been in coma on one or more occasions. The importance of this particular complication of diabetes must not be underestimated, since it represents the chief cause of death in more than 50% of young patients with diabetes of long duration.[4]

COMMENT

The above observations indicate the importance of continuous controlled treatment of diabetes, particularly among the ever-increasing number of patients who are leading useful lives after more than 20 years of diabetes. It is in the management of these young patients with onset of diabetes early in life that every means available should be employed to decrease the incidence and severity of degenerative vascular complications. These complications are now responsible for more deaths and debility than all other causes in this group of patients.

Regardless of the type of management, 10 to 15 years of diabetes are usually required for the development of significant degenerative lesions.[5] Therefore, it is only among patients who have had diabetes for more than 15 or 20 years that a true picture of the relationship between the type of management and the incidence and severity of degenerative vascular lesions can be obtained. Consequently, in any study to determine the relative effects of various types of management, attention should be directed to those patients who have had diabetes for 20 years or more.

Attention to control of diabetes should begin early and aggressive treatment should be maintained continuously from the time the diagnosis is first made.

SUMMARY

Two hundred twenty-one young patients with severe diabetes of 10 to 34 years' duration, with onset between 18 months and 30 years of age, were studied to determine the correlation between the type of management and the incidence and severity of the two most commonly observed degenerative vascular complications (retinopathy and arterial calcification). Comparisons were made between the vascular status of three groups of patients: (1) a "coma" group made up of those who had had one or more attacks of diabetic coma, (2) those who had followed a "free-diet" type of management, and (3) a "controlled" group comprising those who had maintained careful regulation of their diabetes. These comparisons revealed the following:

1. An increase in the frequency and severity of degenerative vascular complications of diabetes commensurate with increases in duration of the disease occurred.

2. For any given duration of diabetes, there was a significantly lower incidence of advanced degenerative changes among those patients who had maintained better

3. Wilson, J. L.; Root, H. F., and Marble, A.: Diabetic Nephropathy, New England J. Med. **245**: 513 (Oct. 4) 1951.

4. Joslin, E. P., and Wilson, J. L.: Lessons For Future Treatment from 472 Fatalities in Diabetic Children, Brit. M. J. **2**: 1293 (Dec. 9) 1950.

5. Root, H. F.; Sinden, R. H., and Zanca, R.: Factors in the Rate of Development of Vascular Lesions in the Kidneys, Retinae, and Peripheral Vessels of the Youthful Diabetic, Am. J. Digest. Dis. **17**: 179 (June) 1950. White, P., and Waskow, E.: Arteriosclerosis in Childhood Diabetes, Proc. Am. Diabetes A. **8**: 140, 1948. Root, H. F.: Diabetes and Vascular Disease in Youth, Am. J. M. Sc. **217**: 545 (May) 1949.

control of their diabetes. Also, for each ensuing decade of duration of diabetes, the effects of differences in type of management became more significant.

3. No patient who followed a free-diet regimen of management showed both normal retinas and absence of calcified blood vessels after 20 or more years of diabetes, whereas 8% of those in the controlled group did.

4. After 20 to 34 years of diabetes, more than 57% of patients in the free-diet group showed advanced degenerative changes, whereas only 25% of patients in the controlled group had such lesions.

These observations definitely support the concept that continuous, aggressive treatment, directed toward maintenance of physiologic conditions, is a better form of management of diabetes than the free-diet plan, which permits a constantly disturbed metabolic state, reflected in persistent hyperglycemia and glycosuria.

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CHRONIC STRESS AND PEPTIC ULCER

I. EFFECT OF CORTICOTROPIN (ACTH) AND CORTISONE ON GASTRIC SECRETION

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Since the advent of corticotropin (ACTH) therapy, a number of reports have appeared describing massive gastric hemorrhage or the development, reactivation, or perforation of peptic ulcers during prolonged corticotropin administration.

The purpose of this communication is to present evidence that the chronic administration of corticotropin produces an increase in gastric acidity and gastric pepsin with subsequent peptic ulceration, perforation, or hemorrhage. The studies to be presented indicate, moreover, that chronic stress affects the stomach by a hormonal mechanism which is mediated through the adrenal gland.

It is well established that chronic physical and emotional stress leads to the release of corticotropin by the pituitary and that corticotropin in turn stimulates the adrenal cortex to secrete a variety of steroid hormones including cortisone and closely related compounds.[1] The repeated administration of corticotropin over a period of time simulates chronic stress, since it elicits many of the same responses as those of sustained alarm.[2]

The occurrence of gastrointestinal ulceration is an integral and prominent part of the alarm reaction in response to a number of stress factors such as nervous and emotional stress, temperature changes, muscular exertion and fatigue, infections, burns, anoxia, shock, and intracranial lesions.[3] All of these alarming stimuli may be associated with an increased incidence of gastrointestinal ulceration, perforation, or hemorrhage.

The relationship of prolonged emotional stress and alarm to gastroduodenal ulceration and chronic peptic ulcer is well documented.[4] The significantly increased incidence of perforated peptic ulcers in England and Sweden during the heavy air raids [5] and the increased incidence of peptic ulcer in England, Germany, and Switzerland during World War II [6] are ample evidence of the role of stress in gastrointestinal ulceration.

The pathway by which emotions and other forms of stress are transmitted to the stomach is generally considered to be neurogenic by way of the vagus nerve. Systemic stress and emotional stimuli such as rage, fear, and anxiety are expressed, under cortical control, through the hypothalamus and relayed to the vagal centers by neural pathways. Stimulation or excitation along the course of the fiber tracts from the anterior hypothalamus to the vagal centers produces gastric erosions, perforations, or ulcers accompanied with hypersecretion and hyperchlorhydria.[7]

The hypothalamus, however, may also play an essential hormonal role in the response to stress which is independent of nervous pathways and forms a key link in the release of corticotropin by the pituitary. Recent studies indicate that in response to emotional and systemic stress the cells of the anterior hypothalamus secrete a humoral substance which stimulates the pituitary to release corticotropin.[8]

The studies to be presented indicate that emotional stress and anxiety may also induce gastrointestinal ulcer-

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From the Medical Clinic, Peter Bent Brigham Hospital, the West Roxbury Veterans Administration Hospital, and the Department of Medicine and the Biophysical Laboratory, Harvard Medical School.

Dr. Thomas A. Warthin of the West Roxbury Veterans Administration Hospital and Dr. Samuel P. Hicks, Peter Bent Brigham Hospital, cooperated with the authors during the course of these studies.

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. Selye, H.: General Adaptation Syndrome and Diseases of Adaptation, J. Clin. Endocrinol. **6**: 117, 1946.

2. (*a*) Selye, H.: Physiology and Pathology of Exposure to Stress: Treatise Based on Concepts of General-Adaptation, Montreal, Acta, Inc., 1950. (*b*) Dalton, A. J., and Selye, H.: Blood Picture During Alarm Reaction, Folia Haemat. **62**: 397, 1939. (*c*) Long, C. N. H.: Conditions Associated with Secretion of Adrenal Cortex, Federation Proc. **6**: 461, 1947.

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4. Grinker, R. R., and Spiegel, J. P.: Men Under Stress, Philadelphia, The Blakiston Company, 1945. Ivy, A. C., and others: Peptic Ulcer, Philadelphia, The Blakiston Company, 1950.

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7. Cushing, H.: Peptic Ulcers and Interbrain, Surg., Gynec. & Obst. **55**: 1, 1932.

8. Hume, D. M.: Role of Hypothalamus in Pituitary-Adrenal Cortical Response to Stress, J. Clin. Invest. **28**: 790, 1949.

ation by a hormonal mechanism through the hypothalamic-pituitary-adrenal-gastric axis (Fig. 1).

The reported cases of ulcer production, perforation, or hemorrhage during corticotropin therapy in most instances occurred after the "chronic stress" of corticotropin administration for seven or more days. Beck and his associates reported an acute perforation of a duodenal ulcer occurring after seven days of corticotropin therapy (100 mg. daily) in a patient with previously negative x-rays of the stomach. Generalized peritonitis associated with severe retrosternal burning, nausea, and vomiting occurred in a second patient after the administration of 150 mg. of corticotropin daily for 20 days.[9] Heller and associates observed two patients with perforation of a duodenal ulcer following corticotropin therapy. Neither of these patients had any past history of gastrointestinal symptoms or disease. The first patient received 225 mg. of cortisone daily for five days approximately two weeks

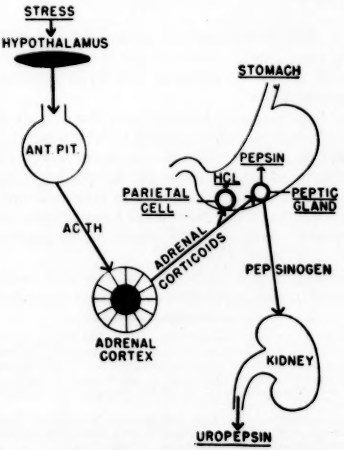

Fig. 1.—Hormonal pathways by which emotional and physical stress may affect the stomach, resulting in an increased production of gastric hydrochloric acid and pepsin.

before admission to the hospital and then suffered a duodenal perforation after receiving 60 mg. of corticotropin daily for two and one-half additional days. The second patient received 3,100 mg. of cortisone over a period of 16 days before her ulcer perforated.[10] Flink also observed a perforated peptic ulcer in a patient with no antecedent history after chronic corticotropin therapy.[11] Warren noted massive gastric hemorrhage in an arthritic patient with no previous ulcer history who received 1,200 mg. of cortisone over a period of nine days.[12] Habif, Hare, and Glaser reported an acute perforation of a duodenal ulcer in a previously asymptomatic patient who received 80 mg. of corticotropin daily for a total of 29 days.[13]

Although it is difficult to be certain, there is no evidence that any of the above patients had a duodenal ulcer prior to hormone therapy and one patient had a previously negative x-ray of the stomach.

Activation of a previously existing peptic ulcer was reported by Smyth in three instances. The ulcer of one patient had been healed and quiescent for nine years but perforated after he received 75 mg. of corticotropin daily for five days. Autopsy revealed acute and chronic ulceration with perforation of the duodenum associated with acute and chronic inflammatory reaction. Reactivation of ulcer symptoms associated with sudden severe pain and melena was observed after 22 days of corticotropin therapy (2.84 gm.) in a patient who had been asymptomatic since the demonstration of an ulcer crater six months previously. A third patient experienced severe excruciating pain four days after corticotropin therapy (100 mg. daily). This patient had a gastric ulcer and presented evidence of localized peritoneal reaction before the hormone was discontinued.[14] In two patients with a previous history of peptic ulcer deeply penetrating ulcers requiring surgical intervention developed after cortisone therapy.[11] A fatal massive gastric hemorrhage occurred in a patient with meningitis who received 1,700 mg. of cortisone over a period of seven days. Autopsy revealed that the hemorrhage originated from an exacerbation of an old healed duodenal ulcer.[12]

METHODS

Corticotropin was administered intramuscularly in doses of 100 to 160 mg. daily for a period of 3 to 4 weeks to six patients with essentially normal stomachs, one patient with a gastric ulcer, and one patient with a healed duodenal ulcer.

Three hours after a light evening meal a Levin tube was inserted into the stomach and continuous 12-hour aspiration was instituted in accordance with the method described by Levin and others.[15] On the following morning the tube was left in place and the stomach aspirated by continuous manual suction. The first specimen was discarded and then three to five consecutive 15-minute aspirations were obtained with constant suction following the method of Bloomfield and others.[16] Consistent volumes of gastric secretion were obtained during these serial 15-minute aspirations. Identical conditions always prevailed in subsequent aspirations during corticotropin therapy. The diet was kept constant and whenever possible the aspirations were performed by the same operator. During the aspiration the fasting patient received nothing by mouth and no belladonna alkaloids or sedatives were administered. The end of the tube was positioned roughly in the lower fundus. The collected juice was immediately placed in an ice bath. The studies were restricted only to patients who tolerated intubation well.

9. Beck, J. C.; Browne, J. S. L.; Johnson, L. G.; Kennedy, B. J., and MacKenzie, D. W.: Occurrence of Peritonitis During ACTH Administration, Canad. M. A. J. **62**: 423, 1950.

10. Lubin, R. I.; Misbach, W. D.; Zemke, E. M.; Hammarsten, J. F., and Heller, B. I.: Acute Perforation of Duodenal Ulcer During ACTH and Cortisone Therapy, to be published.

11. Flink, E. B.: Personal communication to the authors.

12. Warren, L.: Personal communication to the authors.

13. Habif, D. V.; Hare, C. C., and Glaser, G. H.: Perforated Duodenal Ulcer Associated with Pituitary Adrenocorticotropic Hormone (ACTH) Therapy, J. A. M. A. **144**: 996 (Nov. 18) 1950.

14. Smyth, G. A.: Activation of Peptic Ulcer During Pituitary Adrenocorticotrophic Hormone Therapy: Report of 3 Cases, J. A. M. A. **145**: 474 (Feb. 17) 1951.

15. Levin, E.; Kirsner, J. B.; Palmer, W. L., and Butler, C.: Variability and Periodicity of Nocturnal Gastric Secretion in Normal Individuals, Gastroenterology **10**: 939, 1948.

16. Bloomfield, A. L.; Chen, C. K., and French, L. R.: Basal Gastric Secretion as Clinical Test of Gastric Function with Special Reference to Peptic Ulcer, J. Clin. Invest. **19**: 863, 1940.

The continuous 12-hour nocturnal gastric secretion and the basal morning fasting secretions were obtained on at least two occasions before corticotropin therapy was instituted in order to establish a base line control. The studies were repeated at weekly intervals during the administration of corticotropin and were again repeated several weeks after corticotropin had been discontinued in order to establish the level of secretion during the recovery period. The adrenal response to stimulation was confirmed by eosinophil counts and 17-ketosteroid excretion studies. The volume, consistency, and blood and bile content of each specimen were recorded. The pH was determined with the glass electrode, and free hydrochloric acid and total acidity were determined by titration with 0.1 N solution of sodium hydroxide, using Töpfer's reagent and phenolphthalein as indicators. Pepsin was determined by the method of Bucher, Grossman, and Ivy.[17]

TABLE 1.—*Effect of Corticotropin (ACTH) on Gastric Acidity**

Patient	Average Values	Control Period 1	Control Period 2	No. of Days ACTH Administered 7	14	21	Recovery Period 1	Recovery Period 2
J. A.	15 min. volume (cc.)	17	..	20	18	..	..	..
	Free HCl (c. u.)	18	..	55	30	..	..	..
	Free HCl/hr. (mg.)	44	..	162	79	..	..	..
H. E.	15 min. volume (cc.)	22	14	27	18	18	..	..
	Free HCl (c. u.)	20	32	60	78	70	..	..
	Free HCl/hr. (mg.)	65	65	236	204	183	..	..
O. D.	15 min. volume (cc.)	20	22	21	30	31	32	32
	Free HCl (c. u.)	20	15	28	18	73	15	15
	Free HCl/hr. (mg.)	59	48	85	79	330	70	48
R. I.	15 min. volume (cc.)	21	..	20	..	..	..	..
	Free HCl (c. u.)	28	..	80	..	..	..	..
	Free HCl/hr. (mg.)	85	..	234	..	..	..	..
I. N.	15 min. volume (cc.)	21	27	..	25	27	17	..
	Free HCl (c. u.)	20	32	..	59	86	21	..
	Free HCl/hr. (mg.)	61	126	..	220	332	51	..
C. U.	15 min. volume (cc.)	17	20	32	33	35	30	27
	Free HCl (c. u.)	30	47	48	58	60	45	17
	Free HCl/hr. (mg.)	74	136	221	280	300	197	64
B. F.	15 min. volume (cc.)	10	15	..	24	..	27	..
	Free HCl (c. u.)	0	7	..	70	..	0	..
	Free HCl/hr. (mg.)	0	15	..	242	..	0	..

* Continuous 15-minute serial aspirations for one hour (basal secretion).

Coincidental 24-hour uropepsin excretions were determined by a modification of the method described by Bucher, Mirsky, and Anson.[18] Urine specimens were collected on frequent occasions during the period of corticotropin administration and for approximately a week prior to and following corticotropin therapy. The effect of cortisone on uropepsin excretion was determined in four subjects with normal stomachs who received 200 to 500 mg. of cortisone daily for 4 to 18 days.

RESULTS

Effect of Corticotropin upon Gastric Acidity.—The continued administration of 100 to 160 mg. of corticotropin daily for a period of 7 to 21 days produced a marked increase in the basal gastric secretion of hydrochloric acid (Table 1) as manifested by an increase in the average free and total acidity in clinical units, output of free hydrochloric acid in milligrams per hour, and a decrease in the pH of the gastric juice.

The clinical units (c. u.) of free hydrochloric acid increased 100 to 330% with a mean increase of 208% in the basal fasting secretion obtained by continuous aspiration of serial 15-minute samples. Total hourly secretion of free hydrochloric acid, expressed as milligrams, increased 175 to 510% with a mean rise of 270% during the administration of corticotropin. The increase in gastric acidity was delayed in one patient (O. D.) until 21 days of corticotropin administration, while in others the acidity rose within the first week. A marked increase was noted within seven days in patients J. A. and H. E. (Table 1).

The dramatic increase in gastric acidity observed during corticotropin administration and the fall to control levels after corticotropin was discontinued is demonstrated in Figure 2. The increase in gastric acidity represents a true increase in acid concentration, since the volume of gastric secretion did not rise significantly during corticotropin administration. One patient (B. F.) had 0 to 7 units on two occasions prior to corticotropin administration. After 14 days, the mean free acidity rose to 70 units with an hourly secretion of 242 mg. free hydrochloric acid. Three weeks after corticotropin therapy was discontinued, the free acidity fell to 0. The gastric acidity returned to precorticotropin control levels in all instances after discontinuation of corticotropin therapy (Table 1).

The nocturnal 12-hour gastric secretion similarly demonstrated a profound increase in free acidity within 7 to 21 days of continuous corticotropin administration (Table 2). The mean rise in clinical units was 162% with an average increase in milligrams of free acid of 235%. The volume of the 12-hour aspirations did not increase appreciably during corticotropin therapy except in one patient with a healed duodenal ulcer (C. U.). The gastric juice volume and concentration of acidity were both increased considerably in this patient (Fig. 3).

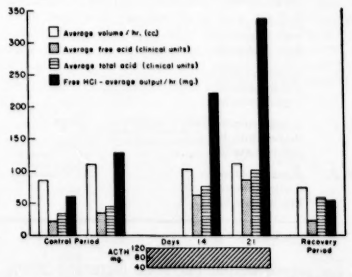

Fig. 2.—Effect of corticotropin (ACTH) on gastric acidity (basal secretion) in one patient (I. N.), demonstrating the increase in free hydrochloric acid during corticotropin administration.

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18. (*a*) Bucher, G. R.: Uropepsin: Review of Literature and Report of Some Experimental Findings, Gastroenterology **8**: 627, 1947. (*b*) Mirsky, I. A.; Block, S.; Osher, S., and Broh-Kahn, R .H.: Uropepsin Excretion by Man: Source, Properties and Assay of Uropepsin, J. Clin. Invest. **27**: 818, 1948. (*c*) Anson, M. L., and Mirsky, A. E.: Estimation of Pepsin with Hemoglobin, J. Gen. Physiol. **16**: 59, 1932. (*d*) Spiro, H. M.; Reifenstein, R. W., and Gray, S. J.: Effect of Adrenocorticotropic Hormone upon Uropepsin Excretion, J. Lab. & Clin. Med. **35**: 899, 1950.

When corticotropin was discontinued, the 12-hour secretion of acid returned to control levels (Table 2).

Effect of Corticotropin on Gastric Pepsin.—A similarly significant increase in the concentration of gastric juice pepsin was observed in the serial 15-minute basal aspirations during 7 to 21 days of continuous corticotropin administration (Table 3). The mean pepsin concentration in five of the seven patients studied rose 182% and the pepsin output per hour increased 209% but, after discontinuation of corticotropin, both values returned to the precorticotropin control levels.

It is of considerable interest that there was no significant rise in pepsin concentration in two patients (H. E. and C. U.) in spite of a marked increase in the gastric acidity (186 to 263%) in both instances. The hourly output of pepsin rose in the peptic ulcer patient (C. U.) because of an increase in the volume of gastric secretion during corticotropin administration (Table 3).

The 12-hour continuous nocturnal secretion revealed a 168% increase in the mean total pepsin output over the 12-hour period. Although the volume of the 12-hour aspirations increased approximately 100% during the administration of corticotropin to the patient (C. U.) with a healed peptic ulcer, there was in addition a significant increase in the pepsin concentration as well as the total pepsin output (Figure 3).

TABLE 2.—*Effect of Corticotropin (ACTH) on Gastric Acidity**

Patient	Average Values	Control Period		No. of Days ACTH Administered			Recovery Period
				7	14	21	
I. N.	Volume (cc.)	396	303	...	364	345	306
	Average free HCl (clinical units)	10	32	...	12	49	7
	Free HCl secreted per 12 hours (mg.)	142	352	...	165	612	77
C. U.	Volume (cc.)	880	810	1,260	1,630	1,650	1,025
	Average free HCl (clinical units)	41	24	32	78	91	16
	Free HCl secreted per 12 hours (mg.)	1,300	700	1,474	4,600	5,500	590
H. E.	Volume (cc.)	368	290	423	722	475	...
	Average free HCl (clinical units)	36	19	64	75	52	...
	Free HCl secreted per 12 hours (mg.)	484	198	972	1,970	890	...

* Twelve-hour nocturnal aspiration.

TABLE 3.—*Effect of Corticotropin (ACTH) on Gastric Pepsin**

Patient	Average Values	Control Period		No. of Days ACTH Administered			Recovery Period
		1	2	7	14	21	
J. A.	15 min. volume (cc.)	17	...	20	18	...	...
	Peptic units/cc.	272	...	472	779	...	...
	Peptic units/hr.	18,500	...	37,760	56,000	...	...
H. E.	15 min. volume (cc.)	18	...	27	18	18	...
	Peptic units/cc.	512	...	581	482	471	...
	Peptic units/hr.	36,800	...	63,000	34,800	39,400	...
R. I.	15 min. volume (cc.)	21	21	20	...	...	20
	Peptic units/cc.	572	639	1,500	...	...	813
	Peptic units/hr.	48,000	53,500	120,000	...	...	65,040
O. D.	15 min. volume (cc.)	20	22	21	30	31	32
	Peptic units/cc.	150	177	847	577	458	170
	Peptic units/hr.	12,000	15,600	71,000	69,300	57,000	21,800
I. N.	15 min. volume (cc.)	21	27	...	25	27	17
	Peptic units/cc.	466	274	...	997	716	444
	Peptic units/hr.	39,200	29,600	...	99,700	77,500	30,000
C. U.	15 min. volume (cc.)	17	20	32	33	35	27
	Peptic units/cc.	341	319	339	264	235	267
	Peptic units/hr.	23,100	25,520	43,100	35,000	33,000	28,760
B. F.	15 min. volume (cc.)	10	15	...	24	...	26
	Peptic units/cc.	0	232	...	431	...	0
	Peptic units/hr.	0	13,900	...	41,500	...	0

* Continuous 15-minute serial aspirations (basal secretion).

Corticotropin and Uropepsin Excretion.—The uropepsin excretion in the urine reflects the peptic activity of the stomach. It is derived from the secretion of pepsinogen directly into the blood stream by the peptic cells of the stomach. Pepsinogen is then transported to the kidneys and is excreted in the urine as uropepsin.[18b]

That uropepsin has its origin in the stomach is evidenced by the disappearance of the enzyme following total gastrectomy and by its absence in the urine of patients with pernicious anemia.[19] Thus, the peptic glands of the stomach may be considered to have an endocrine as well as exocrine function. Uropepsin represents the endocrine activity, while the gastric pepsin represents the direct secretion of the gastric glands into the stomach lumen.

19. Gray, S. J.; Spiro, H. M., and Reifenstein, R. W.: ACTH and Gastrointestinal Enzymes, in Mote. J. R.: Clinical ACTH Conference: Proceedings of First Conference, Philadelphia, The Blakiston Company, 1950, pp. 177-183; ACTH and Gastrointestinal Enzymes, Bull. New England M. Center **12**: 169, 1950. Spiro, H. M.; Reifenstein, R. W., and Gray, S. J.[18d]

Previous studies in this laboratory have demonstrated that corticotropin injected into normal subjects produced a marked increase in the 24-hour excretion of uropepsin approximating 126% (Fig. 4).[19]

The oral or parenteral administration of 250 mg. of cortisone daily to normal subjects produced a rise in

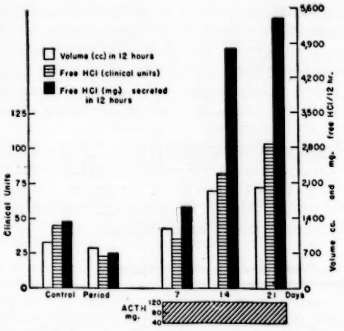

Fig. 3.—Effect of corticotropin (ACTH) on gastric acidity (12-hour nocturnal secretion) in one patient (C. U.), demonstrating a dramatic increase in the secretion of hydrochloric acid to the active ulcer level. An active duodenal ulcer developed in this patient two months later.

uropepsin excretion similar to that obtained with corticotropin. The average increase was 88% and was observed in most instances within 24 to 72 hours.

The increase in uropepsin excretion paralleled the rise in gastric juice pepsin in patients receiving corticotropin continually for periods of 7 to 21 days (Table 4). The mean uropepsin increase was 194% compared to an average rise in pepsin concentration of 182%.

COMPLICATIONS OF CORTICOTROPIN ADMINISTRATION

Correlation of Complications with Gastric Acidity, Pepsin, and Uropepsin.—Corticotropin was administered intramuscularly to a patient with a gastric ulcer in doses of 25 mg. four times a day for 10 days. Shortly thereafter the patient presented definite evidence of impending perforation with localized peritonitis, and there was marked aggravation of her ulcer symptoms with an increase in the white blood cell count from 8,500 to 15,000, the appearance of guaiac-positive stools, severe muscle spasm, and exquisite localized tenderness in the epigastrium.

This exacerbation of ulcer symptoms on corticotropin therapy was associated with an increase in gastric pepsin from control levels of 570 to 600 units per cubic centimeter of gastric juice to levels of 1,500 units on the seventh day of corticotropin administration. The average pepsin output rose from control levels of 51,000 units per hour to 120,000 units. After corticotropin therapy was discontinued, the pepsin fell to the original level prior to therapy (Table 3). There was no significant change in the volume of gastric secretion during corticotropin administration.

The increase in gastric pepsin was accompanied by an increase in urinary uropepsin from control levels of 4,900 units per 24 hours to 10,270 units during the severe exacerbation of epigastric distress. After corticotropin therapy was discontinued and the patient became asymptomatic, the urinary uropepsin returned to the previous level of 4,795 units per 24 hours (Table 4).

A significant increase in gastric acidity occurred during the exacerbation of symptoms during corticotropin administration (Table 1). On the eighth day, the clinical units of free acid increased from 28 to 80 units and the output of free acid rose from control levels of 85 mg. to 234 mg. per hour.

When corticotropin therapy was discontinued, the patient became asymptomatic and a gastric resection was performed several weeks later. Microscopic examination of the specimen revealed a new acute penetrating ulcer at the site of the old gastric ulcer with early hemorrhagic necrosis of the scar—an acute exacerbation of a chronic ulcer.

CASE 1.—R. I., a woman aged 66, entered the hospital with a history of a gastric ulcer, diagnosed and treated for two months in another hospital. The patient apparently had had the ulcer for about five years. She presented the classic symptoms of epigastric pain occurring several hours after meals and relieved by ingestion of food. The patient was awakened occasionally at night by the pain. Roentgenograms revealed a gastric ulcer on the lesser curvature of the stomach. Gastroscopy confirmed the diagnosis. The gastric ulcer could be seen clearly on the lesser curvature of the anterior wall. The ulcer was approximately 1 in. (2.54 cm.) in diameter and was approximately ⅜ in. (0.95 cm.) in depth. The impression was gained that this was a benign lesion.

Treatment and Course: The patient was treated with a regimen of ulcer management consisting of milk and cream and a preparation of aluminum hydroxide gel with magnesium trisilicate and had a prompt response. Her symptoms cleared and she felt quite well. The ulcer management was then discontinued except for the ulcer diet and frequent feedings of milk and cream. The patient remained essentially asymptomatic.

Corticotropin was then administered in doses of 25 mg. four times a day. Within 24 hours the patient began to complain of a recurrence of her ulcer pain which was decidedly aggravated during the night and was associated with much flatulence and lower abdominal distention. After three days of hormone administration, there was pronounced epigastric tenderness and a localized area of protective muscle spasm which had hitherto not been present. The gnawing epigastric ulcer distress still

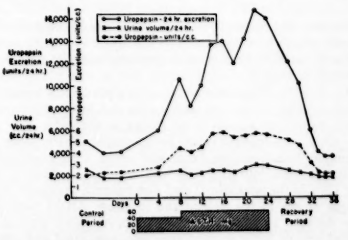

Fig. 4.—Effect of corticotropin (ACTH) on uropepsin excretion in one patient (A. D.), demonstrating an increase of uropepsin excretion to the active ulcer range during corticotropin administration. This patient died of a massive gastric hemorrhage and duodenal perforations during a subsequent course of hormone therapy for rheumatoid arthritis.

persisted. After five days of hormone therapy, there appeared to be definite evidence of peritoneal irritation, as manifested by an area of severe muscle spasm and exquisite localized tenderness in the epigastrium. The patient complained bitterly of pain, which doubled her up on occasions. She felt that the pain was partly relieved when she drew up her legs.

On the sixth day of hormone administration, it was believed that there was definite danger of perforation and localized

peritonitis. The white blood cell count had risen from 8,500 to 15,000 and the stools became guaiac-positive although there was no significant fall in the hematocrit. The patient consequently was placed on a regular regimen of milk, cream, and aluminum hydroxide gel with magnesium trisilicate. This gave her partial relief, but she still complained of definite ulcer pain, particularly severe at night. The pain, tenderness, and physical observations that suggested a localized peritoneal reaction remained unchanged. After 10 days of administration of 100 mg. of the hormone a day, all medication was stopped. The roentgenograms revealed no change in the size of the ulcer, and there was no evidence of healing gastroscopically.

The patient was then given frequent feedings of milk and cream and Sippy powders. Within a few hours all her pain disappeared and she became essentially asymptomatic. Within 48 hours the localizing signs in the epigastric area had disappeared and the patient was quite comfortable. After several weeks, a gastric resection was performed and the ulcer in the stomach was found to be perfectly benign.

Microscopic Examination: There was an acute, recent ulcerative necrosis of the mucosa with its base in the surface of the muscularis. The base was composed of fibrinoid necrotic cellular debris in which were scattered disintegrated polymorphonuclear leukocytes. The immediate underlying muscle contained polymorphonuclear leukocytes and lymphocytes and fairly numerous capillaries and fibroblasts were growing radially into the base of the ulcer.

The muscularis beneath the ulcer had previously been thinned by a dense fibrotic process which extended out to the subserosa. In this subserosa and to some extent in the outer part of the scar there was considerable hemorrhage. There were many prominent blood vessels, large and small, that extended from the serosa well into the scar and muscularis. Similar vessels were seen in the muscularis and just beneath the ulcer, running at right angles to the axis of the stomach. All of these vessels were densely surrounded by lymphocytes and plasma cells. Smaller vessels in the scarred area were congested and contained numerous polymorphonuclear leukocytes, many of which had begun to invade the vessel wall and in some instances had passed beyond the vessel wall. Many of these vessels in the hemorrhagic areas showed loss of continuity of the walls and their contents merged with the surrounding hemorrhage.

Summary: Chronic ulcer with acute exacerbation. At the site of the old ulcer there is a new acute penetrating ulcer with early hemorrhagic necrosis of the scar with resulting thinning of the muscularis and total width of the wall.

The second patient (Case 2) died of a massive gastric hemorrhage and duodenal perforation after four courses of corticotropin therapy for rheumatoid arthritis. On the administration of 40 mg. corticotropin daily during the first course of treatment, the uropepsin excretion increased from the pretreatment level of 4,200 units per 24 hours to the unprecedented level of 16,740 units on the 22nd day (Fig. 4). At this point, the patient complained of ulcer-like burning epigastric distress, nausea, and vomiting. When corticotropin was discontinued, the uropepsin fell precipitously to 12,200 units and gradually returned to the control levels eight days later. The increase in uropepsin excretion was accompanied with an increase in the concentration of uropepsin from an average of 2.1 units per cubic centimeter during the control period to 5.7 units on the eighth day of corticotropin administration.

Normal persons excrete 1,500 to 3,000 units of uropepsin daily. Patients with active duodenal ulcers usually excrete increased amounts of uropepsin. Excretion of 16,000 units, however, has never been exceeded in any duodenal ulcer patient in our experience.

TABLE 4.—*Effect of Corticotropin (ACTH) on Gastric Pepsin and Urinary Uropepsin*

Patient	Average Values	Control Period 1	Control Period 2	No. of Days ACTH Administered 7	14	21	Recovery Period	% Increase
J. A.	Gastric pepsin (units/cc.)	272	...	472	779	...	...	187
	Gastric pepsin (units/hr.)	18,500	...	37,760	56,000	...	...	202
	Uropepsin (units/24 hr.)	2,507	...	4,416	11,234	...	2,100	348
H. E.	Gastric pepsin (units/cc.)	512	...	581	482	471	...	...
	Gastric pepsin (units/hr.)	36,800	...	63,000	34,800	39,400	...	71
	Uropepsin (units/24 hr.)	2,713	...	5,234	9,936	9,860	2,400	266
R. I.	Gastric pepsin (units/cc.)	572	639	1,500	...	...	813	135
	Gastric pepsin (units/hr.)	48,000	53,500	120,000	...	...	65,040	124
	Uropepsin (units/24 hr.)	4,889	4,920	10,270	...	...	4,795	109
O. D.	Gastric pepsin (units/cc.)	150	177	847	577	458	170	390
	Gastric pepsin (units/hr.)	12,000	15,600	71,000	69,300	57,000	21,800	354
	Uropepsin (units/24 hr.)	3,900	4,450	7,400	7,300	14,000	4,500	236
I. N.	Gastric pepsin (units/cc.)	466	274	...	997	716	444	114
	Gastric pepsin (units/hr.)	39,200	29,600	...	99,700	77,500	30,000	154
	Uropepsin (units/24 hr.)	2,406	2,632	...	4,816	5,798	2,200	130
B. F.	Gastric pepsin (units/cc.)	0	232	...	431	...	0	86
	Gastric pepsin (units/hr.)	0	13,900	...	41,500	...	0	200
	Uropepsin (units/24 hr.)	3,186	3,104	...	5,486	...	2,737	74

CASE 2.—A. D., a 23-year-old man, entered the hospital for treatment of severe rheumatoid arthritis and amyloidosis. During his hospital stay, the patient received four courses of corticotropin intramuscularly. During the first course (Sept. 27 to Oct. 18, 1949), which consisted of 40 mg. daily for eight days and then 60 mg. daily for 16 days, there developed in the patient nausea, vomiting, and epigastric distress, which slowly responded to an ulcer diet and Sippy powders. A gastrointestinal series suggested antral gastritis but did not reveal an ulcer crater. The effect of corticotropin on uropepsin excretion is presented in Figure 4.

A second course of corticotropin therapy from Nov. 29 to Dec. 28, 1949, consisted of 1,900 mg. over a period of 30 days and was again accompanied with considerable nausea and vomiting.

The third course of corticotropin was administered from Jan. 18 to Feb. 8, 1950, and consisted of 40 mg. daily for 19 days and was complicated by a mild psychotic tendency. One month after this course had been completed, the patient began to complain of severe ulcer-like, burning epigastric pain and slight hematemesis. Despite negative gastrointestinal x-ray series, these symptoms were quite refractory to ulcer management. Blood was observed in the gastric contents which contained 44 units of free hydrochloric acid.

In March, 1950, he became asymptomatic in respect to the gastrointestinal tract and he was then given a fourth course of corticotropin therapy from March 23 to April 20, 1950. He received 40 mg. daily for 20 days and then the dose was gradual-

ly tapered off. Despite maintenance of a Sippy regimen, the patient complained of occasional heartburn which was relieved by milk and antacids. His appetite and food intake improved during this course. At the end of treatment, however, his temperature rose to 103.8 F. The next day bloody stools and massive hematemesis occurred after a bout of severe abdominal pain. Shock, anuria, and respiratory failure led to his death within 24 hours.

Autopsy revealed blood in the stomach, a diffusely hemorrhagic gastric mucosa, and friable, hemorrhagic, necrotic areas in the mucosa of the duodenum and distal ileum.

Microscopic specimens revealed acute hyperemia and diffuse hemorrhage of the mucosa. In one area there was superficial necrosis of the mucosa with a polymorphonuclear leukocytic response. Considerable bloody serum was seen adherent to the surface of the mucosa. Most of the microscopic findings were limited to the mucosa and submucosa. No thrombi were observed and none of the deep vessels showed evidence of disease.

Further Clinical Observations.—Two perforated duodenal ulcers were observed in a patient receiving 2,080 mg. of corticotropin over a period of 19 days.

CASE 3.—T. K., a 54-year-old man, was admitted for corticotropin treatment of biopsy-proved periarteritis nodosa. After six days of 100 mg. of corticotropin daily, several small hematemeses developed. Treatment was continued, however, and on the 10th day of therapy, the daily dose was increased to 120 mg. On the 14th day of treatment, there developed in the patient severe right upper quadrant tenderness and spasm associated with ileus. Pruritic jaundice followed with elevation of the serum alkaline phosphatase. Corticotropin was administered in doses of 120 mg. daily for five more days and then was discontinued after a total period of 19 days.

The jaundice gradually diminished, but diffuse abdominal tenderness, which had its onset after 14 days of corticotropin therapy, persisted, particularly in the right upper quadrant. A palpable abdominal mass associated with diarrhea developed in the patient and he died in uremia and pulmonary edema 15 days after corticotropin had been discontinued, and approximately 20 days after the onset of the abdominal pain.

Autopsy revealed two duodenal perforations, one 3 mm. in size on the posterior wall, about 1 cm. beyond the pyloric ring, and a second perforation 1 cm. in diameter with irregular, necrotic mucosa overhanging its margins about 2.5 cm. beyond the first perforation.

Microscopic study revealed the wall infiltrated with lymphocytes and plasma cells with only an occasional polymorphonuclear leukocyte. A narrow zone of enzymatic digestion surrounding the perforation was observed and the wall here was infiltrated with lymphocytes and plasma cells. There was no periarterial infiltration or scarring. There was no fresh thrombosis and no evidence of periarteritis nodosa.

The lack of polymorphonuclear leukocytes would indicate that this lesion was at least two weeks old. There was no evidence of a preceding chronic duodenal ulcer.

A massive fatal gastric hemorrhage developed in the following patient after he had received 3,160 mg. of corticotropin over a period of 76 days.

CASE 4.—W. M., a 58-year-old male patient, was treated for rheumatoid arthritis and received 60 mg. of corticotropin daily for 8 days, 40 mg. daily for 21 days, and then 60 mg. for 5 more days, until discharged from the hospital on Nov. 15, 1950. His total hospital dose was 1,620 mg. over a period of 34 days. At home he received an additional total dose of 1,540 mg. over a period of six weeks, ending Dec. 28, 1950. On Dec. 29 the patient suffered excruciating epigastric and substernal pain. A week later hematemesis, mild shock, and abdominal pain followed and were poorly controlled by methantheline (banthine®) bromide, transfusions, and Wangensteen constant suction. His condition gradually deteriorated, with repeated hemorrhage and irrationality. He died on Jan. 2, 1951. The presumptive diagnosis was hemorrhage from a peptic ulcer because of previous x-rays demonstrating a duodenal ulcer and an ulcer history of five years' duration with symptomatic relief by antispasmodics and an ulcer diet.

GASTRIC COMPLICATIONS INCIDENT TO OTHER FORMS OF STRESS

Anoxia.—Anoxia itself constitutes a form of severe stress and may be associated with an acute gastric perforation similar to that seen during corticotropin administration. This was demonstrated in the following patient who had a gastric ulcer of several years' duration and suffered a perforation during a period of anoxia secondary to a coronary occlusion.

CASE 5.—F. I., a 64-year-old white man, was known to have gastrointestinal complaints of 40 years' duration controlled on sporadic ulcer management. He experienced a gastric hemorrhage in January, 1948, and a gastrointestinal series and gastroscopy established the presence of a gastric ulcer on the lesser curvature of the stomach at the angulus. The patient became asymptomatic on ulcer management and remained free of symptoms for the duration of the history. In 1948 he also was found to have hypertensive cardiovascular disease with a blood pressure of 210/130 and a moderately enlarged heart.

The patient was completely asymptomatic until Sept. 17, 1950, when he suffered severe oppressive chest pain accompanied with sudden shortness of breath, weakness, cyanosis, and orthopnea. A diagnosis of acute posterior myocardial infarction was made by electrocardiogram. The patient was in shock for most of this hospitalizaion with the blood pressure dropping from 120/100 to 80/60. In spite of oxygen and the insertion of an airway, his breathing remained stertorous and he remained cyanotic and in shock.

Six hours prior to death, the patient complained of severe acute epigastric pain associated with signs of peritoneal irritation and abdominal rigidity. A Levin tube was inserted and guaiac-positive material was obtained. He was then given milk and antacid through the tube without relief of the distress. The patient finally died on the fourth hospital day.

Autopsy revealed an acute myocardial infarction of the posterior wall of the left ventricle, subsequent to acute and complete occlusion of the major coronary artery.

The stomach revealed a large encircling shallow ulcer 5 cm. in diameter beneath the cardia with a red-brown color and no fibrin over the surface. On the lesser curvature, 5 cm. from the pylorus, there was another large ulcer 6 cm. in diameter with a perforation about 1 cm. in diameter which extended to the peritoneal cavity. The omental fat was adherent to the serosal surface in the region of the perforation. This perforated gastric ulcer was at the site of the previous chronic gastric ulcer observed over a period of two years prior to death.

Microscopic examination showed acute recent necrosis of the mucosa extending to the submucosa at the margins and through the muscularis at the site of the perforation. At the margin there was necrotic mucosal cellular debris, infiltrated by polymorphonuclear leukocytes, most of which were disintegrating. The base of the ulcer was composed of a layer of fibrinoid material containing polymorphonuclear leukocytic debris. Adjacent to this base were several veins and one artery whose walls were infiltrated by well-preserved polymorphonuclear leukocytes. The wall of one vein was necrotic and part of this wall had disintegrated. At the site of perforation the acute necrotizing process extended through the muscularis and stomach wall. There was no fibroblastic response anywhere in the ulcer; the vascular damage was more recent than the overlying ulcerative process, as evidenced by the newly infiltrated leukocytes, general lack of endothelial swelling, and no evidence of beginning organization. The mucosal ulcerative process was about 24 to 48 hours old, the deeper reaction in the vessels more recent.

The ulcer and perforation described were considered acute, but they could represent an acute exacerbation of an old chronic process.

The occurrence of massive gastric hemorrhage from a pyloric ulcer during the intravenous administration of corticotropin to a patient with chronic anoxia is illustrated by the following case.

CASE 6.—J. K., a 45-year-old man, a respiratory cripple with chronic asthmatic bronchitis and cor pulmonale, was admitted in severe respiratory distress with cyanosis, secondary polycythemia, and alkalosis. After bronchoscopic drainage and Drinker respiratory therapy had been instituted, 50 mg. of corticotropin was given intravenously over an eight-hour period. Twenty-four hours later, hematemesis and tarry stools appeared after a second such intravenous dose of corticotropin. Forty-eight hours after admission the patient died in shock from massive hemorrhage from a pyloric ulcer revealed at autopsy. There was no previous history of a peptic ulcer. Because of bronchial asthma, chronic bronchitis, and emphysema, the patient had suffered chronic anoxia and cyanosis for a number of years.

At autopsy the stomach and entire gastrointestinal tract contained black tarry blood. There was an ulcer of the anterior pyloric ring with slight surrounding induration about 1 cm. in diameter and 0.5 cm. in depth.

Microscopic section of the ulcer and pyloric region showed acute fibrinoid necrosis of the mucosa, submucosa, and immediately underlying muscle with infiltrating polymorphonuclear leukocytes which had degenerated. A number of small venules were eroded by this process in the floor of the ulcer. There was no fibrosis or evidence of chronic vascular disease or thrombosis. The histological age of the lesion was estimated at two days or less.

Brain Tumor.—An exceedingly high gastric pepsin and urinary uropepsin in the peptic ulcer range were observed in a patient with a tumor involving the hypothalamus.

CASE 7.—R. M., a 4-year-old boy, was admitted on Sept. 13, 1950, with a four-day history of dizziness, unsteadiness, and a staggering gait. There had been no history of gastrointestinal symptoms or disease previously. Ventriculograms on Sept. 19 suggested a posterior fossa tumor with fourth ventricular block.

The day after ventriculography the patient was drowsy and vomited a few times without hematemesis. On Sept. 25, fever of 103 F and a stiff neck suddenly developed. Lumbar puncture revealed cloudy cerebrospinal fluid from which alpha hemolytic streptococci were cultured.

Two days later, Sept. 27, 1950, as the meningitis was responding to antibiotics, grossly bloody coffee-ground material was aspirated from the stomach and the stools became tarry. A posterior fossa exploration, performed on Oct. 2, revealed an extensive medulloblastoma invading the hypothalamic area.

Postoperatively, the patient never regained consciousness. The gastric bleeding and tarry stools persisted until Oct. 25, when the stools became guaiac-negative following prolonged therapy with antacids and frequent tube feedings.

The gastric juice pepsin concentration on Oct. 21 and Oct. 28 were 1,076 and 1,636 units per cubic centimeter, respectively, and the uropepsin excretion was 13,580 units per 24 hours. Although the suspected Cushing's ulcer had supposedly healed, the patient's coma deepened and he died on Nov. 5, the 34th postoperative day. Autopsy permission was refused.

COMMENT

It is of considerable significance that corticotropin may produce, in normal persons, a level of gastric acidity and peptic activity commonly found in patients with an active duodenal ulcer. The average increase in the free acid, pepsin, and uropepsin each approximated 150 to 250% and reflected in most instances a rise in concentration. The administration of corticotropin to normal persons increased the basal secretion of hydrochloric acid to the active duodenal ulcer level in every instance. Prior to corticotropin administration, the average basal secretion, calculated on a 10-minute basis, was 31×10^{-2} mEq. hydrochloric acid, which agrees closely with Bloomfield's data for normal persons.[16] During corticotropin administration, these same patients secreted 119×10^{-2} mEq. hydrochloric acid, which falls into the range of active duodenal ulcer patients. The 12-hour nocturnal secretion of hydrochloric acid during corticotropin therapy also rose to the active duodenal ulcer level [15] (Table 2).

Patient C. U., with a healed inactive duodenal ulcer, secreted 5,550 mg. of free hydrochloric acid during corticotropin administration, which is an unprecedented level for an active duodenal ulcer patient (Fig. 3). The 12-hour nocturnal volume of gastric juice increased, as a result of corticotropin, to 1,650 cc., which is considerably higher than the average value observed in patients with an active duodenal ulcer (Table 2). An active duodenal ulcer developed in this patient two months later.

The uropepsin excretion in normal persons receiving corticotropin also increased to levels commonly observed in patients with peptic ulcer (Table 4). This was notably demonstrated in the patient who died of a massive gastric hemorrhage and duodenal perforation following four courses of corticotropin therapy for rheumatoid arthritis (A. D.). The uropepsin level increased from the pretreatment level of 4,200 units in 24 hours to an exceedingly high range of 16,740 units after 22 days of corticotropin therapy (Fig. 4). Although the gastric acidity was not measured in this patient, it was probably increased considerably, in view of the data which have been presented and the patient's ulcer-like symptoms which responded to antacid therapy.

The necrosing and erosive properties of acid-pepsin gastric juice are well established. There is no reasonable doubt that the continuous stimulation or overproduction over a period of days or weeks of highly acid gastric juice rich in pepsin may result in a reactivation, perforation, or hemorrhage from peptic ulcer.[20] This was dramatically demonstrated in one patient (R. I.), in whom evidence of perforation and peritonitis developed while on corticotropin administration for 10 days with an accompanying threefold increase in free acidity and a 135% increase in the concentration and hourly output of gastric pepsin (Tables 1, 3, and 4).

The prolonged administration of corticotropin or cortisone may subsequently present a hazard to patients with peptic ulcer. An x-ray examination of the stomach prior to hormone treatment and the use of antacids such as aluminum hydroxide may be indicated whenever therapy for several weeks is contemplated. Special caution is recommended in the hormone treatment of patients with anoxia and intracranial lesions, since corticotropin and cortisone constitute additional stress factors, as exemplified in certain patients (F. I., J. K., and R. M.).

The development of hemorrhage, perforation, or reactivation of a peptic ulcer usually requires seven or more days of corticotropin administration. Review of the literature reveals only the exceptional case in which these complications occur sooner. A similar time relationship

20. Ivy, A. C., and others: Peptic Ulcer, Philadelphia, The Blakiston Company, 1950, pp. 207-225, 554.

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was observed with respect to the effect of corticotropin on acid and pepsin production. In most instances, the maximum acid and pepsin effect was observed after 7 to 14 days of corticotropin therapy, although in some instances 21 days of corticotropin administration were necessary (O. D. and C. U.) (Tables 3 and 4). The administration of 200 mg. of corticotropin intramuscularly or 500 mg. cortisone orally to four active ulcer patients produced no significant change in the gastric acid or pepsin in the ensuing 24 hours. Apparently chronic and repeated stress is necessary to increase the acid and pepsin content of the gastric juice. An example of this may be the increased incidence of perforated peptic ulcers during the repeated air raids in England.

The characteristic microscopic picture of the stomach of patients experiencing perforation, hemorrhage, or reactivation of an ulcer during corticotropin administration was that of an acute process with edema, hyperemia, necrosis, and cellular infiltration of the mucosa and submucosa. There was no evidence of vascular disease or thrombosis. The histology suggested an enzymatic and acid digestion process rather than an underlying vascular disease and revealed changes similar to the ulcerative lesions produced experimentally by the instillation of highly acid or acid pepsin solutions into the stomach. Under these conditions, the mucosa is unusually susceptible to ulceration, hemorrhage, or perforation.[21]

The effect of corticotropin on the stomach is due to the secondary outpouring of adrenal cortical steroids rather than to the primary action of corticotropin itself. Patients with adrenal insufficiency, for example, show no gastric response to corticotropin, but a definite effect was demonstrated with cortisone.[19] Cortisone and corticotropin elicit an equal gastric response in normal persons, however. The increase in gastric acidity or pepsin content depends, however, on an adequate steroid level. One patient receiving 30 to 40 mg. of corticotropin intramuscularly every six hours for four weeks did not demonstrate a fall in circulating eosinophils or an increase in urinary ketosteroid excretion and failed likewise to experience an increase in gastric acidity or pepsin. The amount of cortisone necessary to produce a gastric response also varies in different persons.

The importance of stress factors in the pathogenesis and chronicity of gastroduodenal ulcers has been established, and peptic ulcer has often been designated as a stress disease. The production of acute gastric and duodenal hyperemia and erosions, sometimes with hemorrhage, is a characteristic manifestation of the first stage of the general adaptation syndrome. Chronic stress, fear, and anxiety, as well as hostility and resentment, are associated, moreover, with an increased secretion of hydrochloric acid.[22] The exact relationship, however, between the acute gastroduodenal erosion of the alarm reaction and chronic peptic ulcer in man has not yet been clarified.

Although the gastric response to stress is undoubtedly mediated in part, at least, through the vagus nerve, the evidence presented strongly suggests that an additional hormonal mechanism is involved which is intimately associated with the general adaptation syndrome.

It has been demonstrated conclusively that after bilateral vagotomy, lesions in the brain stem are followed by focal hemorrhages in the stomach identical in all respects with those observed following brain stem lesions with the vagi intact.[23] Thus, there is good evidence that interruption of the vagal roots still leaves open a pathway over which abnormal or excessive impulses from the hypothalamic centers can exert a deleterious effect on the stomach.

As a result of emotional or systemic stress, the hypothalamus appears to secrete a humoral substance which stimulates the pituitary gland to secrete corticotropin. Corticotropin in turn activates the adrenal cortex to release a number of steroid hormones, including cortisone and cortisone-like compounds, which then cause the gastric glands to secrete acid and pepsin (Fig. 1). Whether these steroids act on the vagal nerve endings or are associated with other hormones such as gastrin remains to be determined.

SUMMARY AND CONCLUSION

1. Corticotropin (ACTH) administered intramuscularly to normal subjects in doses of 100 to 160 mg. daily for periods of three to four weeks produced a marked increase in the basal and nocturnal gastric secretion of acid and pepsin approximating 200%. In every instance, corticotropin increased the acid secretion to the active duodenal ulcer level. A similar gastric response may be induced with cortisone.

2. The maximum acid and pepsin effects were observed after 7 to 14 days of continuous corticotropin therapy. This coincides with the usual duration of corticotropin or cortisone therapy which precedes the reactivation, perforation, or hemorrhage from peptic ulcer.

3. The administration of 100 mg. of corticotropin daily to a patient with an active gastric ulcer produced definite evidence of impending perforation, localized peritonitis, and a marked aggravation of the ulcer symptoms. This was accompanied with a threefold increase in gastric acidity and a marked increase in gastric pepsin secretion.

4. The uropepsin excretion was increased during corticotropin therapy to levels commonly observed in patients with active duodenal ulcer. Unusually high uropepsin levels were observed in a patient in whom a massive fatal gastric hemorrhage and duodenal perforations developed during corticotropin therapy.

5. The prolonged administration of corticotropin or cortisone constitutes a hazard to patients with peptic ulcer. An x-ray examination of the stomach prior to therapy and the use of antacids are indicated in such cases. Similar precautions may be necessary in patients with anoxia or intracranial lesions.

6. The present studies suggest that chronic emotional and physical stress is transmitted to the stomach by a hormonal mechanism mediated through the adrenal gland and may induce gastrointestinal ulceration through the hypothalamic-pituitary-gastric pathway.

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PROBLEMS OF PROLONGED CORTISONE TREATMENT FOR RHEUMATOID ARTHRITIS

FURTHER INVESTIGATIONS

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In September, 1949, our research group began investigations of prolonged use of cortisone and corticotropin (ACTH) in patients with rheumatoid arthritis, hoping to answer the questions: 1. Can cortisone and corticotropin be tolerated for long periods? 2. Does prolonged use of these hormones benefit the arthritis? 3. Is prolonged use of cortisone and corticotropin practical? In June, 1950, at the meeting of the American Rheumatism Association, experiences to that date were reported as observed in nine patients, three of whom received corticotropin and six of whom received cortisone for more than 100 days. These patients, then still being treated, had tolerated the hormone with only minor or no undesirable effects and with good antirheumatic benefit. Now, after 12 additional months, we make a progress report of further investigations. Although they are being continued and cannot be finally summarized, the number of cases has been substantially increased, and there has now been opportunity to observe the course of many patients after the hormone has been discontinued.

PLAN OF STUDY

Because of the greater facility of its prolonged use in ambulatory patients, cortisone has been employed in all new cases during the past year, and this report deals only with the cortisone-treated patients. The hormone was administered orally almost exclusively during the last nine months of study.

The number of cases now reported on is 44 (25 women, 19 men). To be included in this study it was required that a patient receive the hormone uninterruptedly for more than 100 days. Seventeen were treated for more than 200 days; nine, for more than 300 days; four, for more than one year, the longest time being 406 days. In all instances, it was planned not to produce complete remission, but rather to effect only partial remission to the degree that the patient and physician considered desirable and sufficient to relieve most of the pain and stiffness and to improve function enough to substantially rehabilitate the patient. In this way, clinical and laboratory signs of the disease persist but are substantially reduced.

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THERAPEUTIC RESULTS OF PROLONGED THERAPY

In general there was good, oftentimes excellent antirheumatic effect during administration of the hormone. In only two instances (4%) when long-term treatment with cortisone had been planned was it stopped because of poor therapeutic effect. Results in different patients are shown in graphs of representative cases (Fig. 1 to 3).

Explanation of Graphs.—In these graphs the plan of administration and dosage of the hormone is shown at the top. Upright, crosshatched columns depict intramuscular injections; horizontal lines show oral medication divided into the number of daily doses, arranged with the morning dose on the bottom and subsequent doses above. Below this, clinical manifestations (a composite of symptoms and signs as evaluated by the attending physician) are plotted in terms of percentage of pretreatment findings. For example, if it were estimated that the symptoms, signs, and function in composite are half the degree that obtained before hormone was administered, the clinical manifestations would be charted as 50%, if at another time the combined estimate were one-quarter of the original degree, the residual clinical manifestations at that time would be 25%, or, said in another way, there would be a 75% remission (the degree of remission being in inverse proportion to the percentage of clinical manifestations). Although these are estimations, they are made very carefully, after critical evaluation, and serve better than any other way known to us to represent graphically the clinical state. Below clinical manifestations is charted the erythrocyte sedimentation rate (Westergren method). In some graphs, other data are plotted below this section.

Patient W. H. (Fig. 1) received cortisone longer than did any other patient—406 days. The steroid was given intramuscularly at all times to this patient. There was no difficulty from side effects at any time, and the patient was maintained in about 75% remission through most of this long period of time. After initial daily injections of 100 mg. of cortisone acetate suspension this dose was injected three times weekly. On two occasions, this amount of hormone was inadequate to maintain the desired degree of remission, so daily injections were given for a few days. After the 150th day, the desired partial remission was maintained for a long period with injections of 100 mg. given three times a week. Later this dose was injected twice weekly; then 75 mg. and later 50 mg. were injected twice weekly. In this way the hormone was gradually withdrawn, and the clinical manifestations have continued at a level of 50% or less of the precortisone level up to the time of this writing—190 days after discontinuance of cortisone therapy. This is the longest postcortisone remission we have observed, and it is quite the

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exception. This case, then, is an example of a patient with rheumatoid spondylitis who improved significantly while cortisone was administered in only moderate doses, and who continued to be significantly improved long after administration of the hormone was discontinued.

Another patient, A. J. (Fig. 2), had a similar course. The route of administration was changed from intramuscular injection to oral on the 247th day. The effect of 50 mg. daily by the oral route compared favorably with that of an average of 43 mg. daily by injection. The oral dose was divided into three parts given immediately after meals, a plan we have found best in practically all cases. This plan of oral cortisone treatment has given the smoothest effects; the hormone has been well tolerated. Cortisone acetate given orally, in three divided doses, has been found in many trials to have essentially the

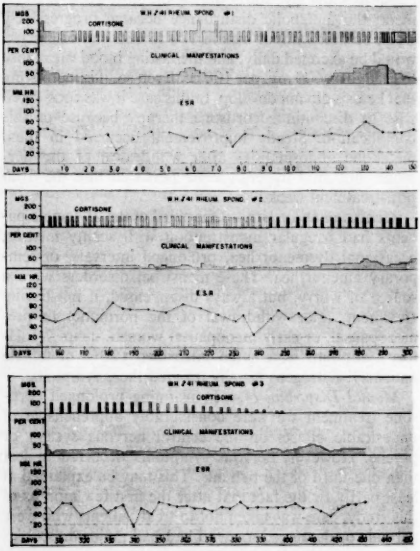

Fig. 1.—Graphic representation of prolonged intramuscular administration and clinical effects of cortisone acetate.

same effects as the intramuscularly injected suspension if given in 20% larger doses. When the entire daily amount was given in one oral dose many tests showed the requirement for comparable effects was approximately twice the amount needed when given intramuscularly. Hence, practically all oral maintenance doses of cortisone were given in three divided doses after meals. For this patient the oral dose was very gradually reduced to 30 mg. daily, and it is seen (Fig. 2) that the clinical condition continues to be very good (now 300 days in treatment). Only minor undesired hormone effects have occurred.

For patient M. R. (Fig. 3) cortisone acetate was used orally throughout and the good initial improvement has been maintained even on a daily dose as small as 50 mg. No complicating hormone effects have occurred.

MAINTENANCE REQUIREMENT OF CORTISONE

The cases described show the good antirheumatic effect during use of cortisone for prolonged periods. The amount required to maintain the desired effect varied from as little as 25 mg. at certain times in a few patients

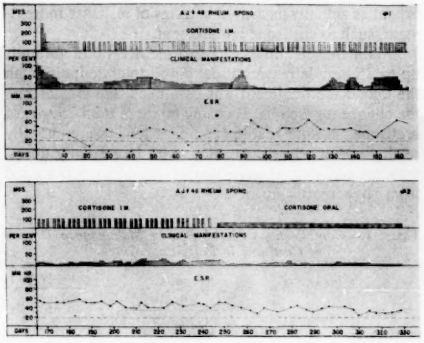

Fig. 2.—Dosage and effect of cortisone acetate given as "maintenance" treatment for a patient with rheumatoid spondylitis.

to more than 100 mg. daily; usually 50 mg. or more was required daily. In many patients a good partial remission could be maintained with 50 to 75 mg. daily. If more than 75 mg. daily was required for satisfactory effect we

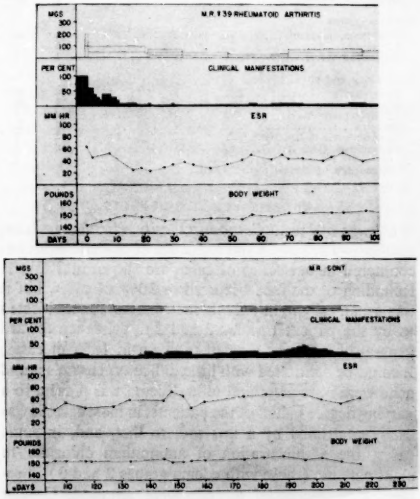

Fig. 3.—Oral administration of cortisone acetate as "maintenance" treatment.

seldom continued treatment, for hormone effects other than the antirheumatic benefit usually made such complications that it seemed unwise to continue to administer cortisone. It was impossible to correlate the difference in maintenance requirement with the extent or durations of

the disease, the age, size, or sex of the patient. We came to regard the maintenance requirement of cortisone as paralleling the severity of the arthritis, even though the requirement did not correlate well with the pretreatment erythrocyte sedimentation rate. Also we realize how difficult it is to accurately determine severity of this disease, except as actually measured in terms of response to treatment, such as cortisone requirement.

"Maintenance" doses of cortisone acetate in amounts up to 75 mg. daily were usually well tolerated; although the longer the treatment was continued, the greater was the chance for trouble. By using no more than 75 mg. of cortisone acetate daily, complications were usually readily corrected or controlled; with larger daily doses, troublesome effects were sooner or later encountered from "hypercortisonism."

TABLE 1.—*Complications Noted During Maintenance Dosage of Cortisone in Forty-Four Cases*

Type	Grades 1	2	3	4	Incidence: Total No. of Cases	%
Cushing's syndrome						
Round face	10	2	1	..	13	30
Obesity	6	2	..	..	8	18
Hirsutism	4	..	..	..	4	9
Acne	2	..	..	..	2	4
Electrolyte problems						
Edema	14	6	2	..	22	50
Potassium decrease	4	..	..	..	4	9
Endocrine problems						
Diabetes	..	1	..	1	2	4
Irregular menstruation	8	..	..	..	8	32
Menopause symptoms	5	..	..	..	5	20*
Nervous system						
Jitteriness, insomnia	9	2	..	..	11	25
Excitement	2	..	..	..	2	4
Depression	..	..	1	..	1	2
Circulatory and blood changes						
Tachycardia	12	2	2	..	16	36
Blood pressure elevation	11	3	..	..	14	32
Telangiectasis	2	..	..	..	2	4
Purpura	3	2	..	..	5	11
Gastrointestinal hemorrhage	..	..	..	2	2	4
Thrombosis (leg)	2	..	..	..	2	4

* Percentage of female patients only.

UNDESIRABLE SIDE-EFFECTS

Change of Facial Contour, Obesity, Hirsutism, Acne, Edema.—The nature and incidence of complications encountered in our series of cases are shown in Table 1. Rounding of the face occurred in 30% of cases, but it was usually slight; in only three instances was it objected to by the patient (grades 2 and 3). Tendency toward general obesity was a small problem in 18% of cases; it could be controlled with little difficulty. Hirsutism and acne were infrequent and mild. Edema was present to a varying degree in half of the patients; in most cases it was easily controlled by a low sodium diet, and, in some cases, the administration of ammonium chloride. In eight patients (those with edema grades 2 and 3) injections of a mercurial diuretic were required. Greater attention to adequate potassium intake was required when diuretics were employed. In two cases, grade 3 edema was difficult to control. The incidence of edema in this group of cases was higher than reported by some investigators, no doubt because a low-sodium diet and potassium or ammonium chloride were not routinely prescribed at the start of treatment, for we wished to determine by experience in how many patients edema develops while maintenance doses of cortisone are being given. Because edema was encountered in only half of the cases, it was thought wise not to impose these dietary restrictions except when needed. Frequent measurements of serum potassium revealed that in 9% of cases low values developed. Orally administered potassium chloride promptly corrected this abnormality and maintained normal levels so that no complications due to low tissue potassium were encountered.

Hyperglycemia.—Disturbance of carbohydrate metabolism developed in two patients. In one case, glycosuria and elevated blood sugar appeared first during the third week of treatment and never became worse than grade 2; the abnormality was reasonably well controlled by dietary measures alone. The second patient began to show glycosuria during the fifth week of treatment; the metabolic disturbance became progressively worse so that without insulin 120 to 180 gm. of glucose would be excreted daily, and the fasting blood sugar rose to as high as 600 mg. per 100 cc. Even so, it is interesting that ketosis did not develop. In this case it was considered wise to discontinue cortisone therapy because of this complication. Steady improvement occurred in these metabolic abnormalities after withdrawal of the hormone, but mild hyperglycemia persisted into the 10th post-treatment week.

Menstrual Disorders.—One-third of the 25 female patients had irregular menstruation with scanty menses, occasional dysmenorrhea, prolonged intervals, or temporary amenorrhea. These menstrual disorders were a source of worry, but always disappeared, if not during treatment, after withdrawal of the hormone. In premenopausal, or early menopausal women, neurocirculatory symptoms were often intensified (20% of female patients). Estrogens usually relieved these symptoms.

Mental Disturbances.—In planning prolonged cortisone treatment we were considerably apprehensive of undesirable effects on the central nervous system or psyche. However, nervous symptoms occurred in less than one-third of the patients. This may be explained at least partly by the fact that after the first few months of this study, care was taken not to treat patients who were nervous or depressed, or who had had major difficulties of this nature in the past. Moreover, careful search was made throughout treatment for exciting or markedly stimulating effects of the hormone. These effects were considered indications for reducing the dose of hormone. Insomnia was regarded as particularly important. Another factor was that in all cases relatively small doses of hormone were used. With these considerations it is interesting to note that only 25% of all patients complained of nervousness or insomnia, which was relieved by reducing the amount of hormone. In only two patients was there pathologic excitement; this was mild and subsided when smaller doses of cortisone acetate were employed. Major depression occurred in only one patient. In this instance it is probable that a depressed state was aggravated by cortisone, for earlier in her life psychiatric problems existed, and during cortisone administration a quick succession of psychic traumata occurred (death of the patient's mother, a daughter's broken marriage engagement, and the confinement of a son in a neuropsychiatric

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hospital). There is little wonder that a major depression should occur. The patient reacted favorably to shock treatment and a few weeks of psychiatric care after cortisone withdrawal. This patient, one of our early treatment cases, would have been rejected for prolonged hormone treatment in the latter part of the study.

Tachycardia.—A large variety of abnormalities affecting the blood and circulation were noted. Tachycardia was the commonest. A pulse rate of 100 to 120 would frequently persist in these patients without other clinical or electrocardiographic abnormalities and with no changes in the basal metabolic rate. We cannot explain this tachycardia; it may be due to the general stimulating effect of the hormone. Usually within 7 to 14 days after discontinuing cortisone therapy, which was not done because of the tachycardia, the pulse rate reverted to the precortisone level. Various changes occurred in the electrocardiograms of several patients, but these were not characteristic of any disease pattern.

Elevation of Blood Pressure.—In one-third of the patients elevation of blood pressure was noted, but this was usually in the order of 20 or 30 mm. Hg systolic and 10 to 15 mm. Hg diastolic, and in most instances did not tend to progress to hypertensive levels. Normal or slightly low blood pressure would again obtain in the early post-cortisone period. In only 3 of 44 patients was blood pressure elevated to a moderately hypertensive level; it did not continue to increase and treatment was cautiously continued.

Telangiectasis and Purpura.—Telangiectasis appeared in two patients during cortisone treatment, and has persisted without other recognized abnormalities except tachycardia in one of the patients. In five patients, small purpuric hemorrhages developed along the extremities, usually the legs. These ceased during continuance of treatment.

Hemorrhage.—In two female patients there were massive hemorrhages into the gastrointestinal tract. One of these patients had had a peptic ulcer and had hemorrhaged on two previous occasions. That not all patients who have had ulcers get in trouble when cortisone is used is shown by the fact that in several other patients in our series who had ulcers, no activation of the ulcer or hemorrhage occurred during prolonged use of cortisone. The other patient of our group who hemorrhaged had no known gastrointerstinal disease, but after cortisone was withdrawn because of the hemorrhage, an abdominal tumor became evident and was removed surgically. It was a leiomyosarcoma. At the time of operation no cause for bleeding could be found. On the third postoperative day a cautious trial of corticotropin in small doses was attempted because of hypotension, and again a massive hemorrhage occurred. Hence, it seems reasonable to consider the bleeding due to effects of the hormone.

Thrombosis.—Thrombosis of superficial leg veins was mildly troublesome to two patients. In no patient of this group was there thrombosis of coronary arteries or cardiac failure; in fact, in three patients treatment was beneficial and well tolerated when started within a few days after correction of congestive heart failure.

Summary.—It was of particular interest to us that diabetic metabolic disturbances and hypertension did not gradually develop and progress late in prolonged treatment, as we feared might be the case. Instead it was our experience that troublesome diabetic and hypertensive changes made their appearance within the first few weeks of treatment if they occurred. We think it of significance but cannot explain the fact that the incidence and severity of complications were considerably greater among female patients. This is true with all types of side-effects, not just those associated with ovarian functions.

In this report, all complications encountered have been considered in relation to prolonged use of cortisone; however, it may very well be that some of these are in no way related to or the result of the hormone.

Treatment is being continued in 23 of our patients, and in the majority a fixed daily dose continues to maintain the desired effect. In only five cases (11%) has it been necessary to gradually increase the amount of cortisone after several months' use, to keep the desired antirheumatic effect. This has been in contrast to our experience with corticotropin, which we frequently needed to administer in gradually increasing amounts for maintenance of good effect.

TABLE 2.—*Status of Cases Studied*

	No. of Cases
Treatment being continued	23
Increased dose of hormone required	5
Treatment discontinued	24 *
Because of complications	6
Diabetes	1
Mental depression	1
Edema and poor benefit	2
Massive gastrointestinal hemorrhage	2
By choice	18

* Treatment resumed in some cases.

PROGRESS OF PATIENTS AFTER WITHDRAWAL

Opportunity to study post-cortisone events has been presented in the follow-up of the 24 patients in whom for various reasons, cortisone therapy was discontinued (Table 2). In six of these cases (14%) it was considered necessary to withdraw the steroid for the best interest of the patient because of troublesome complications. These were diabetes and mental depression, one instance of each; edema, which was difficult to control in two patients who had little antirheumatic benefit; and two instances of massive hemorrhage. It should be noted that five of these six patients were women. In 18 cases cortisone was discontinued because of convenience or by choice in order to study the post-hormone state. In a few of these cases treatment was resumed.

Duration of Remission.—Just as the benefits during treatment were usually gratifying, so the difficulties after prolonged treatment with cortisone were very disappointing and very discouraging to the patient and physician alike. These events need to be carefully studied (Table 3). In only 17% of the patients was the significant improvement that occurred during treatment maintained longer than 60 days after cortisone was withdrawn. In many of the patients relapse started when the daily dose was reduced below 50 or 25 mg. daily, in many others relapse began early in the post-hormone period. Within 60 days after treatment relapse to the pretreatment level had occurred in approximately 83% of the patients. It is thought that the small percentage of patients who con-

tinued improved after withdrawal of cortisone did so because natural changes of improvement occurred during the use of cortisone and continued long after discontinuance of the hormone, rather than because of any curative effects of the steroid.

Relation of Residual Benefits to Stage of Disease and Length of Treatment Period.—We were particularly interested in two groups of patients. It was hoped that if treatment with cortisone were begun early in the disease and continued for many months, the arthritis might continue suppressed after the hormone was withdrawn. Only two patients of the group had early disease; in both relapse occurred promptly after cortisone was withdrawn. Also, it was hoped that the longer treatment was continued, the more likely improvement would be prolonged after the hormone was discontinued; but relapse occurred as often in those patients treated 200 to 370 days as in those treated 100 to 200 days.

Temporary Suspension of Adrenal Function.—As was anticipated, after cortisone had been administered for a long period and withdrawn, there was indication that the patients' adrenal function was suppressed. This was shown in 40% of our patients by less than normal lowering of circulating eosinophils after corticotropin stimulus (Thorn test), by mild lowering of blood pressure, and by muscular weakness. But in no instance was this a clinical problem in these patients, and recovery of normal adrenal function occurred after two to six weeks.

TABLE 3.—*Post-Cortisone Events in Twenty-Four Cases*

	No. of Patients	%
Improvement maintained 60 to 190 days	4	17
Relapse to pretreatment condition	20	83
Within 10 days	6	25
10 to 20 days	8	33
20 to 30 days	4	17
30 to 60 days	2	8
Temporary hypoadrenalism	10	40
Severe "withdrawal syndrome"	5*	21
Edema	3	12
Hip fracture	2	8

* Four women; one man.

Edema.—There were three instances of edema developing after treatment during which little or no edema had occurred. Two elderly men fell during the post-treatment period and fractured a hip. It is thought that weakness and clumsiness in walking during this post-hormone period accounted for the falls. The injury was sufficient to cause fracture of bone with average calcium content; weakening of the bone from calcium loss due to hormone is not considered to have contributed to the fracture.

Withdrawal Syndrome.—A most distressing illness occurred in 21% of patients after withdrawal of cortisone. This illness, which we call "post-cortisone-withdrawal syndrome," is characterized by severe relapse of the arthritis accompanied by disproportionally severe weakness and stiffness—greater than had been experienced previously—marked fatigue, anorhexia, mild hypotension, and a sense of great discouragement and depression. These patients were miserable; they usually stayed in bed for days or weeks and required assistance for most everything. The condition sometimes lasted longer than the indications of suppressed adrenal function and the metabolic changes in connective tissue during the interval of adjustment to the withdrawal of cortisone. Many forms of special therapy were tried but none were found of value in combating this "withdrawal syndrome." The syndrome always subsided after two to eight weeks, but some of the patients felt more ill than they had ever been with the arthritis, and therefore volunteered that they did not wish cortisone used again. Note that four of the five patients who had this "withdrawal syndrome" were women.

Emotional Readjustment.—Another troublesome post-treatment problem was the necessity for the patient to adjust again to living with his disease, and this was very difficult for some to do. We have long been impressed with the value to the patient of having a good philosophy of living with chronic arthritis. We have found that if this has been acquired, and the patient is then given a "holiday" from his disease by use of cortisone, it may be very difficult for him to adjust again to the post-treatment worsening.

COMMENT

When cortisone is to be withdrawn, a slow reduction of dosage is advised whenever possible; for the metabolic, endocrinologic, and psychologic adjustments are made better and more easily than following abrupt cessation. If the latter is necessary, the patient risks serious trouble because of suppression of adrenal function for a few weeks, if a "stress" situation, such as a surgical operation, requires "adaptation." Fortunately, we encountered no such circumstances, although the shock which resulted from massive hemorrhage was difficult to manage.

Our experiences with the method of prolonged use of cortisone herein reported cause us to feel that such therapy is not practical for all patients with rheumatoid arthritis. A better score for the favorable alteration of the disease is desired for any prolonged treatment which entails the risks during therapy and the potentialities for unfavorable events after cessation of treatment that this form of therapy affords. In further studies different treatment programs employing cortisone may be found more suitable than the one we employed; combinations of steroids may prove advantageous.

To obviate post-cortisone problems the indefinite prolonged use of cortisone has been suggested, but this may not be a practical solution, because antirheumatic benefit from cortisone requires an excess of cortisone—not replacement of a deficiency. Hence it maintains a certain degree of hypercortical adrenalism. No disease known to the authors has been successfully managed for an indefinitely prolonged period by the production and maintenance of a hyperendocrine state.

Investigators realize the great possibilities for utilizing this powerful hormone in the treatment of rheumatoid arthritis. Never before has such a potent antirheumatic substance been available, but we need to know better how to use it. We think results indicate that our plan of prolonged cortisone therapy is of value for a certain group of rheumatoid patients for a definite purpose, but not for routine use for all patients with rheumatoid arthritis. Although we are disappointed in the limitations of this form of prolonged cortisone treatment, we have

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not discontinued interest in or use of, cortisone for rheumatoid arthritis. But we feel that search for a more satisfactory and practical treatment program employing this or related steroids must continue.

CONCLUSIONS

Based on our experiences with prolonged use of cortisone in patients with rheumatoid arthritis, as we have administered it, the following conclusions seem justified: In many patients a good partial suppression of the disease can be maintained on 75 mg. or less of cortisone acetate, orally, daily. Usually this amount of the steroid is tolerated well; numerous minor undesired effects which may occur can usually be corrected or controlled, so that serious complications are infrequent. Treatment of 14% of our patients, some receiving larger doses, had to be discontinued because of serious complications. These were more frequent and more severe in female patients. If large amounts of cortisone acetate are required daily, the problems of hypercortisonism may become serious; therefore we prefer not to use cortisone as maintenance treatment if more than 75 mg. is required daily.

Just as we have been pleased with the benefits of cortisone during its use, we have been very disappointed in the post-cortisone events. Relapse in 83% of patients, including those with arthritis of less than 6 months' duration, even after treatment for as long as a year; severe "withdrawal syndrome"; difficult post-cortisone readjustment to the worsened state of the arthritis—all these facts detract from the benefits of cortisone and diminish the enthusiasm initially held by patient and physician, for its prolonged use.

There is no evidence that the course of the arthritis is ultimately altered favorably by prolonged cortisone therapy as we used it. We do not consider cortisone practical as routine treatment for patients with rheumatoid arthritis, nor do we consider it adequate treatment in itself. Rather we choose to use it for a definite purpose such as to check rapidly worsening disease, or to facilitate physical therapy and rehabilitation. Whenever cortisone is employed, troublesome effects must be expected in some patients, and the physician should be prepared to meet them.

Initially we were concerned chiefly with the questions: 1. Can cortisone be tolerated for long periods by patients with a chronic illness? 2. Will it be beneficial? Now, 18 months after extensive trials, we are more concerned with the question: Will treatment with cortisone be worth while for this patient? We know we must consider what will happen not only during its use but also after the hormone is discontinued. Studies are continuing to clarify further remaining problems.

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PLAN FOR RURAL MEDICAL SERVICES

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I should like to express my thanks for having the opportunity to meet with this interested group in consideration of the many aspects of rural life in the United States today. The whole tone of this conference is serious, and that is as it should be for we are seeking means of improving the lot of more than half of our national population. The problems which are being discussed at this conference are vital to each one of these people, and it is our duty to render the most complete and satisfactory judgments of which we are capable.

I am not sufficiently well informed to answer many of the questions which can be raised today with reference to the medical care of our country people. At best I can only survey these problems sketchily and in the time allowed today give you a summary of how a single rural community faced and solved the problem of expanding its own medical facilities. It is possible that in examining some of the facts which have been established by our experiment in rural medicine we may reach some over-all conclusions which will help us in similar planning on a nationwide basis.

I should like to take a few moments to tell you some of the story of the growth of medical facilities in Bat Cave, N. C. This collection of communities covers an area, all of which is mountainous, of about 500 square miles, containing a population of about 6,000. The families are widely scattered and until recently were without medical services. The nearest medical facility is about 18 miles from the center of the territory. Road development was and is poor, electrification of the area is meager, and telephone facilities are only recently coming into existence. The general population is best classified as a farming population, and the average annual income is remarkably low.

On completion of internship, I elected to start general practice in this area, since I wished to do a rural practice and could find no locality more clearly in need of medical services. For about three years I maintained an office practice in Bat Cave and traveled a distance of 18 miles to the nearest hospital for surgery and treatment of those patients who required hospitalization. I found that I was driving about 175 miles a day, usually in a jeep, and that a 20- to 21-hour day was the rule rather than the exception. I found too that I was frequently being forced to practice bad medicine because of the lack of nearby hospital facilities and the element of sheer fatigue. This prompted me to increase the facilities in my small office to the extent that I was able to do some minor surgery and a few deliveries within the building. It was soon obvious that there was a very genuine need for a small hospital located approximately in the geographical center of the region. Neither I nor any of the people in the

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scattered communities had had training in planning a hospital, but since it seemed to be needed, we had no doubt that the job could be done.

After selection of about 20 respected and hard-working men from all parts of our region, a meeting was called, the need of a hospital discussed, and preliminary plans made. It was agreed first that the group, which had been largely self-chosen, would be the original Board of Trustees of our nonprofit community hospital, and since many of them had been chosen for their abilities to organize construction details, it was understood that this building board might later replace itself with a group better fitted for the operation of the hospital after its completion. Realizing that it would be impossible to raise any substantial sums of money in our relatively poor community, we resolved to obtain, whenever possible, materials and labor for the project free of charge. Thus, each member of the board was allotted the project of obtaining a certain amount of lumber, rocks, hardware, and man power, and a preliminary period of locating and assessing the available materials was allowed. During this time we had a rare stroke of luck, which I believe may well be repeated in other communities. There was located in the center of our region an excellent schoolhouse of fire-resistant structure with approved water and sewerage systems which had been abandoned about 3 years after its construction and had lain idle for about 20 years. This spectacle of abandoned schoolhouses is common in rural areas as a result of school consolidation throughout the United States. With some maneuvering we were able to purchase the building and its grounds at open auction, where all other bidders were tactfully discouraged from competitive bidding. The entire structure and its grounds were purchased for the sum of $1,500.00, and the cash for this purchase was given by a benevolent organization of a nearby town. Thus, we had the outer shell of a structure which was to become our community hospital. The building was roughly 100 by 50 ft., and during a few days spent with a friendly architect, we produced the floor plan and specifications of a 12-bed hospital within its walls. At our next meeting of the board the bill of materials for construction was parceled out as evenly as possible among the members of the board, the total hours of manwork needed were estimated and allotted, and the cash requirements were estimated as closely as possible. Preferring not to delay construction until such time as all materials, man power, and required money had been stock-piled, we elected to start on a shoestring and depend on the good will of the community and the enthusiasm of the workers to carry the job through. Within a period of nine months, through the most concerted community effort imaginable, the school building had been remodeled into a hospital, filled with equipment which was purchased at a low auction price from a defunct hospital, and made ready to receive patients. This was done at a total cash cost of slightly less than $15,000.00, or approximately $1,200.00 per bed, as opposed to prevailing cost estimates of $14,000.00 per bed for hospitals. The hospital is designed as a general hospital and has so far satisfied all necessary requirements in this regard. It was estimated that the 12-bed capacity should be sufficient for our region in view of the low utilization of hospital beds by most rural populations. Until very recently this has proved to be a sufficient number of beds for our purpose. Our nursing staff was recruited from nearby communities and was composed of two registered nurses, two licensed practical nurses, and girls whom I was able to train personally. The remainder of our professional staff was made up of local people, all of whom had been with me for a year or more of preliminary training. We opened our hospital with no surplus in the bank and within a few months were quite satisfactorily in debt. With the faith and assistance of the community and by hard work, we were able to get ourselves out of the red without sacrificing our resolve to treat all charity patients within our territory. So much then for the establishment of our hospital.

What work has been done in this hospital to justify its existence? This in round figures is the record of our hospital over a two-year period of time: 10,000 outpatient visits; 500 surgical procedures; 400 fractures reduced; 600 accidents treated; 270 live births; 1,000 immunizations; 18% free days of care to inpatients; 20% free care to outpatients; 12,000 laboratory procedures performed; 1.5% newborn death rate; 0 maternal deaths; 0.1% surgical death rate; pediatric death rate, 3 deaths out of 600 admissions; medical death rate, 9 deaths out of 800 admissions; 3% referral of inpatients; 5% referral of outpatients; average patient stay in hospital, 4 days; average occupancy, 9 patients.

These gross statistics seem to me to point out several important facts. With reference to the over-all statistics of figures of medical care, it can be seen that it is possible in a year's time to give a very considerable amount of service to the population which we supply, with general figures of mortality which compare quite favorably with almost any large hospital in the United States. I think these low mortality figures do not give evidence of superior medical treatment so much as they show that our patients are seen early in the disease process. It is seen also that the turnover in terms of average stay of a patient is considerably less than that of most hospitals. This is as it should be, since a rural hospital cannot serve as a convalescent home but rather is able to provide only the most urgently needed medical services. Note that the volume of outpatient work is tremendous, considering the size of the hospital. This has been a major factor in sustaining the economic life of the hospital; it means also that all the outpatients in the area are intimately acquainted with the hospital through daily contacts so that they have come to regard the institution as the natural location of all desired medical facilities. The proportion of patients referred either from the outpatient service or as inpatients is not as great as it should be; but when one considers the geographical and financial difficulties of referrals among our country patients, these figures will be more readily understood. It must be emphasized that the statistics given for this hospital represent about 98% of all the medical care received by any of the residents within our 500 square-mile area. Loyalty to our institution is characteristically good, and thus our figures reflect quite accurately the incidence of illness and hospital conditions found in this area. It might be fairly said that if no medical facilities were available in this

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region a large proportion of our sick patients would journey to a distant location to receive the same care which today appears in our statistics. This may be true, but I am not convinced that a very large proportion of our population would consistently travel distances of 18 to 20 miles for ordinary medical care. This has not been the case in years past, and I see no reason to expect such a performance from the rural people in other localities in the United States. If facilities are reasonably available, they will be utilized; but if ordinary medical care involves traveling long distances, uncertain financial arrangements, and treatment in unfamiliar surroundings, I do not believe that we can expect the majority of our country people to seek medical treatment as often as necessary and as early as is proper. Finally, I believe that the statistics of our hospital indicate the one thing which justifies construction and maintenance of such a facility in a rural area capable of supporting it. It is that we may be certain that this hospital has been utilized to the fullest extent by the population which built it and owns it. This evidence of loyalty and general satisfaction is all that any hospital could require for continuing successful function.

So much for the records of our hospital. I believe, as do some others, that this record stands as fairly convincing proof of the value of a tiny rural hospital. We have reached a cross road of opinion today on this question. Most hospital administrators, whose training in the field of small hospitals has been largely neglected and whose knowledge of the medical conditions which obtain among country people is markedly deficient, will persist in maintaining that any hospital under the 50-bed size is a waste of time, energy, and finances. If we are to refute this misconception, it must be done soon, and I am convinced that it can only be done by a study of actual working records of small hospitals which are already functioning. It is true that there is a great danger of building too many of these units and of locating some of them in areas which cannot possibly support them. It will take only a few mistakes in this line to set back the entire program of rural hospital construction a full decade. For this reason we must be extremely cautious in the planning of a rural hospital system, and it would certainly be better to have a small number of such units which would prove their worth than to have a multitude of white elephants.

So far I have considered whether or not a rural hospital is worthwhile and some of the factors involved in the construction of this unit. I have not mentioned the most important item, the medical staff. A hospital without a staff, albeit a one-man staff, cannot hope to function as a hospital. Therefore, country physicians are needed to staff these institutions. There is a severe shortage of country physicians, and the situation seems even worse when it is reflected that only a small proportion of the men now practicing country medicine are trained to serve as a one-man staff in the units which have been described. This is not to be taken as a reflection on the ability of our present country practitioners but rather as an indictment of the system of medical training which obtains in America today and of the system of practice which does not permit the older country physicians to maintain adequate contacts with the newer precepts of medical practice. It is all too well known today that the average general practitioner is not prepared to practice the full range of medicine. The country physician required for a tiny rural hospital must be trained to do adequate obstetrics, general medicine, and to perform satisfactorily those surgical procedures which he will be obliged to do. It would seem to me that these are not impossible requirements for graduates of a grade-A medical school whose internships and residencies have been properly planned. Perhaps in our age of specialization we have overlooked the fact that a proper medical education necessarily embraces all of the fundamentals of medicine, surgery, and obstetrics, and that it is only through neglect or improper direction that a general practitioner is unable or unwilling to continue his training in all major branches of medical practice after he ceases his primary medical schooling. It will serve no purpose to deplore the preparation of our general practitioners today. We must recognize that unless we are willing to improve the training of our medical graduates and to direct them specifically in many instances to a complete general practice, there will be no need for the construction of rural hospitals since they cannot be staffed. These are facts, and no matter how harsh they may seem, they must be accepted and utilized if we ever hope to make progress in the field of rural medicine. What is the answer? The answer lies in the proper selection of a certain percentage of all admissions to medical schools on the basis of residence, previous training, and whether or not they wish and intend to practice rural medicine. Given a reasonable segment of such admissions, we must continue with a well-integrated plan of instruction in the general practice of medicine throughout all the years of the medical curriculum. Next, we must make available a large number of two- or three-year rotating internships tailor-made for rural practice. It is said that a genuine need will inevitably produce the desired end product. There can be no doubt of the need of properly trained rural practitioners; and it is devoutly hoped that the means by which these men may be trained will be shortly forthcoming.

Finally, if we secure the proper physician and provide him with adequate hospital facilities, we must attempt to establish an environment for this man which will encourage and improve his work, prolong his life, and make easier the lot of his successors. This is the responsibility of the community. In my lifetime I have seen the "grass roots" theory of community responsibility and growth fall to the lowest ebb in American history. This situation is perhaps a natural outcome of our recent national philosophy of consolidation, centralization, and total national security. No matter what else this state of mind produced, it certainly resulted in a temporary stagnation of collective community effort, and since the welfare of our nation is based not on the larger centralized portions of our civilization but rather on its tiny collective units, this trend has been disastrous. But it seems to me that lately there has been a renaissance of individual and group spirit. It is almost as if members of our rural communities suddenly awakened to the fact that they would perish if they did not return to old fundamentals of growth. In the last few years we have seen a tremendous resurgence of activity in our small-population groups, a

reassertion of the pioneer spirit which built our country and has kept it strong. It is on this spirit and the known ability of communities to help themselves that I put my faith in the future of rural medicine. I am convinced that once a community sees the necessity of proper medical care and has bent its energies to the construction of facilities and to the acquisition of a physician, that same community will teach itself how to care for the very facilities which it has built.

Many of the medical habits which our country people must learn will seem unnatural and certainly will be difficult. They must understand that their physician can be a complete family physician although his practice does not permit him to travel at any distance from, or be for very long out of touch with, the community hospital. Our people must learn that the best medical care they can receive will be in the local medical center and that almost no one is too sick to be transported to these facilities. They must accept the fact that the days of long home calls, home deliveries, and home surgery are over and that it is only through the full utilization of the hospital which they themselves have built that these facilities will justify their existence. Finally, our country people must learn that it is within their power to kill their physician by abuse of his time and by lack of consideration of his needs for rest and occasional recreation. This sounds very much as if I were trying to inject into the pattern of country practice all the elements of the life of a city specialist. To a certain extent this is true, but I do not believe that these means of protecting the country physician and his workshop will in any way lessen the close familiar contact of the family physician with his people. It is this problem of community consideration which can best be understood by the representatives of rural life gathered here today, and it will be their task to aid in the useful education of communities which are ultimately to receive proper medical care.

A word should be said about financing the rural hospitals the construction which I propose. Although I believe that modification of the construction and equipment standards which will be possible in these hospitals will result in lower over-all construction costs, it would be foolish to anticipate maintenance expenses lower than those of the larger city hospitals. When it is considered that fair salary requirements, high levels of charity care, and piecemeal purchase of equipment and expendables are all major factors in the story of hospital maintenance, it will be understood that an average figure of about $12 per day will be the cost of keeping a patient in a rural hospital.

Since these hospitals will be established in areas where the average per capita income is low, we must expect an operating deficit which will probably amount to about $600 per bed per year. This deficit can be met in part by regular subscribed assistance from the community which is served by the hospital and by a more satisfactory system of contracts with the welfare agencies for the care of indigent patients. There should also be some carefully controlled system of subsidies designed primarily to make up maintenance deficits of these units. These subsidies need not be large and certainly must be controlled at a community level, thus offering no opportunity for bureaucratic interference in the management of the unit; they will, nevertheless, be necessary and should be anticipated if the scale of rural hospital construction reaches the desired proportions. As a rough working figure, I should estimate that from one-third to one-half the deficit could be met by the community, and the balance could be wisely proportioned between county, state, and Federal government, with due precaution against unnecessary control.

If we then accept, as I do, the necessity of the construction of adequate workshops for country physicians in the form of tiny, rural hospitals, we must examine the means by which these hospitals can be established and maintained in our rural communities. I would suggest that in the majority of cases the wisest procedure would be to establish regional health councils designed to serve a given population and/or geographical area, but not necessarily limited by county lines. This health council, representative of the major components of organized rural life which have already been described, could satisfactorily survey the area within its jurisdiction and make a wise decision as to the need of a rural hospital for its people. It is to be emphasized that if there are rural practitioners within the region surveyed by the health council, they should be carefully integrated into the body of this council and their advice respected. The physicians who are already established in rural areas could serve as spark plugs for hospital construction and could give valuable advice with respect to facilities needed for their area. These same physicians should also be invited to determine the need for specialist consultant service to the hospital and must assist in all phases of the planning. It would not be wise in any locality for the community or the health council to proceed independently on a program of hospital construction without the complete sympathy of the local physician or physicians. I stress the necessity of integrating the advisory services and good will of local physicians with any program of rural hospital expansion because I have seen in too many instances the barriers which can be set up if advice of qualified persons is ignored and antagonisms aroused. Such a situation is neither to the credit of local practicing physicians nor the health councils but unfortunately may exist unless a carefully coordinated plan is followed. It must be understood that the future staff of the rural hospitals may at first be comprised of men who have already practiced medicine in the country for some length of time. The wisdom and abilities of these men must not be ignored if the projects are to be satisfactorily completed.

And now finally, despite my personal enthusiasm for projects such as I have described, I must offer a very strong note of warning. It would be far wiser to establish the first hundred or so such hospitals in very secure situations, carefully prepared as regards construction details and complete future maintenance, than to embark on a program of haphazard hospital construction which will result in the eventual failure of some of the units. We must all appreciate the fact that it takes only a few failures in a plan of rural medical service to set the entire program back by a good many years, and since the plan described here is of a revolutionary nature, opportunity should not be afforded for unjust criticism

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if this can be avoided by the application of common sense principles. I would advise the careful location and establishment of a mere handful of prototypes of these country hospitals in each state. These would serve as experimental laboratories to determine the eventual criteria by which we might round out a national plan. In this way, although we would proceed slowly, our progress would be sound and would be based on the grass root principles of community expansion and improvement. It is on these principles that most of our enduring community assets have been established in the history of the United States, and by proper evaluation and utilization of community effort, we may hope to see the return of the country physician and the perpetual establishment of necessary rural medical facilities.

Bat Cave.

EVEN PHYSICIANS DIE

John Alan Appleman, J.D., Urbana, Ill.

The term "estate planning" is not preferred by experts. "Estate analysis" more accurately imports a study of the problems involved in any personalized situation—the plan is the solution resulting only from intensive study. But physicians are, perhaps, the poorest examples of constructive planning. They complain about taxes—yet they do everything possible to throw their income and estate taxes into the highest possible brackets, with no sound thought as to how to reduce them. Inevitably, they are in need of sound investments, but they seek no expert consultation and invest in almost any proposition advanced by a smooth promoter. They fret about their wives' lack of sound business judgment, yet make no provision for the solution of financial problems which are certain to arise on their deaths—leaving widows with many headaches, little experience, and every opportunity for losing their security to the first slick-tongued salesman who comes along. Physicians talk about possible retirement but make no intelligent financial plans for the future.

The typical picture of a young physician in these days is somewhat as follows. Young Dr. Jones, somewhat to his surprise, finds his patient list mounting rapidly. His personal friendships expand also, and the new friends usually are people who are also young and rapidly becoming successful. To entertain, and to have the swimming pool available for the family, Dr. Jones joins the country club. It is inevitable that the old Ford is traded in on a Buick—then young Dr. Jones needs another car because the Buick is usually at the club or needed to pick up the baby sitter. Now the second child is about due, so he and his wife look about for a larger home. But all the better houses seem to be two-story structures, and they are attuned only to a ranch style. So Dr. Jones buys a lot in the new subdivision near the club—perhaps he can get in a few holes of golf after dinner. Then he has some plans drawn for a modest residence. The cost is estimated at $25,000; the building costs $42,000 when complete.

At this point Dr. Jones begins to do some serious thinking. He goes over some figures. He now has $6,000 in the lot, $42,000 in the house, $2,500 in architects' fees, $2,000 in landscaping, and $6,500 in furniture, carpeting, and drapes. That totals around $60,000, which is partly paid from his savings and the balance represented by a bank loan. Also, Dr. Jones has $4,000 invested in automobiles. He begins to figure worriedly that he has an establishment to maintain, large monthly expenditures to meet, and as yet has not invested a cent in any type of retirement program or life insurance.

Perhaps by sheer coincidence a life insurance salesman catches Dr. Jones in that mood. Whether the resulting sale is $25,000 or $100,000, whether it is 10-payment life insurance or ordinary life insurance depends on the conscience of the agent. His customer, the physician, has no conception of the type or amount of life insurance he should carry.

Now Dr. Jones begins to relax mentally. The monthly payments may now be even heavier, with the insurance program, but his clientele is steadily increasing. At this point a pressing desire gnaws at him. He begins to think how pleasant it would be to make money a little more quickly, to relieve any anxiety resulting from financial pressures. Some friends of Dr. Jones are going into a syndicate to drill a wildcat oil well. He invests $3,000. He goes down to watch the operations. The sands are promising. The big night he stays up until 2 a. m. to watch the well brought in. Then, suddenly the driller turns, shakes his head. It is a dry hole!

Dr. Jones drives home, somewhat discouraged. He had not really thought it could miss. Somehow he had envisioned only the royalty checks and not the possibility of failure. This has cured him, Dr. Jones thinks. And perhaps it has cured him of wildcat oil operations; if so, it was a cheap experience. But surpluses and their management continue to cause him disquiet. The thought of leaving money in a bank account to earn no dividends is unattractive; in addition, continuing inflation, he realizes, diminishes the value of his dollar savings. So Dr. Jones learns of the stock market. He establishes an account. In the meantime he finds an attractive farm—only $400 an acre, and he enters into a contract to buy it.

But, suddenly, one day, Dr. Jones feels a little faint. Disturbed, he takes his own blood pressure. His closest friend, a cardiologist, is pleased to see him, then alarmed by the anxiety he sees in his visitor's face. Tests and consultation follow, with the advice to take life easier, to relax more, and to reduce or eliminate those night calls.

But Dr. Jones now has forgotten how to relax. Not only does he now worry about the cardiac condition; he begins to worry about his obligations. There are the insurance payments to meet—no one had thought to suggest a waiver of premium provision on disability to him, or perhaps he had rejected it as an unnecessary expense. But now his family has established a certain manner of living. There are payments to meet on the mortgage, con-

tract payments to meet on the farm. Of course, overhead expenses for the office continue monthly and income taxes must be paid on his net income. There seems to be no escape; Dr. Jones feels that he must continue to work until some day Mother Nature puts an end to his labors.

This example could be complicated with a sudden depression, shrinking Dr. Jones' stocks and farm values. But Dr. Jones has complicated it enough. Suppose he should die now. Every asset—including the house, cars, farm, securities, and life insurance—will be included in the amounts forming the basis of his estate tax. Dr. Jones did not figure on that. They told him that if the house and farm were held in joint tenancy, they would go directly to his wife—that his life insurance was not a part of his estate at all. But they forgot to tell him that the tax man included in his computations all of these joint tenancies and the life insurance. So the life insurance, which young Dr. Jones had tied up to provide for the education of his children, may well conclude with a tax lien against distributive shares, and his widow, whom he thought had ample security from the other assets, may be forced to sell the securities, farm equity, and house at depressed prices to pay administration costs and taxes. She may be left penniless.

If this causes the reader discomfort, it is because it strikes too close to home. Such a picture is typical of the majority of physicians—some of whom survive to experience a few of these headaches, others of whom leave these problems to widows and heirs. Because of these acute taxation and personal problems, the field of estate analysis has come into being—a specialty combining elements of taxation, will review, trusts, investments, insurance, and many other phases of law and business. The physician will not find his solution in a simple will drafted by his family lawyer, or in the elementary suggestions of his income tax accountant. Even as he would refer neurosurgery patients to one competent in that field, he must himself consult a specialist.

What is involved in an estate analysis? The simplest definition of an estate analysis is that it is the making and analyzing of an inventory of a given person, his material and financial accomplishments, his powers, talents, and responsibilities, his aims and directives in life, and his spiritual desires. The assembling of that material constitutes what is called a "plan foundation," "data sheet," or "inventory." The second step involves the analysis of this material and the shaping of the vast amount of data into a theory of procedure which will solve the problems presented. The third step is the drafting of the instruments which place the estate plan into effective operation.

In order to accomplish these steps, complete cooperation of the client—let us assume in this discussion he is a physician—is required. It may require two weeks of the client's time, scattered in driblets of a half dozen conferences, considerable personal intensive thought and self-analysis, the compiling of materials and documents, scrutiny of the instruments prepared by the analyst, and like matters. A physician may begrudge the time necessary, but many a businessman may begrudge the convalescence following the removal of a brain tumor. He was given no choice; the thing had to be done. Here the analyst must have cooperation if he is to do that which is required.

In order to prepare a proper estate analysis for any client, complete information must be secured by the estate analyst with the general assistance of the physician, and possibly his accountant, family attorney, investment counsel, and life insurance underwriter; many other sources of information may have to be contacted. Much of the information required can be secured from a personal examination of the physician's life insurance policies, deeds, personal income tax returns, and the balance sheet and tax returns of any business in which he may be collaterally interested, without unduly burdening him with duplicative details. But whatever source may be employed prior to completion of the analysis, complete data is required. Such data includes complete personal information concerning the physician, his wife, and every member of the family and their expectancies, including information concerning his and his wife's parents. This is vital for the preparation of any will or trust instrument and helps to give the estate analyst all pertinent family data.

A complete analysis of the physician's assets and income must be made, including the nature of each type of property. One may even find in this connection that the physician has homes in different states. This is most important in determining the question of domicile and in considering conflicting and overlapping laws which may apply. As one of the physician's assets, insurance, not only life insurance, but health and accident and property and liability coverages, must be disclosed. The life insurance policies should be turned over to the estate analyst for personal inspection. Only in that way can detailed information be secured concerning the policies and settlement agreements which are then contained in the policies and wise provision made for any changes required or thereafter needed. The insurance analysis may show a woeful lack of coverage of specific properties and of various liability coverages, which should be added. For an illustration, the physician may own property which is used for tavern purposes directly or indirectly, perhaps by social clubs, thus greatly increasing his hazards.

A complete disclosure of the physician's liabilities is required, whether direct or contingent, in order that provision may be made for the discharge of such obligations. His ordinary expenditures for living purposes, his activities, membership in social organizations, and his relationship to gifts and trusts, whether created by him or for his benefit or that of members of his family, must be revealed. A statement of income, assets, liabilities, and expectancies of his wife, children, and both sets of parents, must be made.

With reference to personal information, as a part of any proper analysis, information is needed of the physician's health both in the past and at the present time, his hobbies, his practices with regard to vacations, and his retirement plans. It has been wisely stated that retirement is not an escape—one must retire to something and not from something. Only by ascertaining the intentions and desires of the physician can provision be made for these contingencies. His desires in regard to administration, guardianships, and even funeral plans are then sought. It the reader thinks those problems insignificant, I might mention that last year I saw a case in which a family almost came to blows because the son thought his father

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should be cremated, while his sister was violently opposed to cremation. And, lastly, one must prod deeply to ascertain the relationship of the physician with his family, and his personal desires with reference to each family member, his relatives, employees, charities, or any other subject of his bounty.

While there is no substitute for a personal examination by the analyst of the documents, policies, and written instruments which must be considered, nevertheless there is still a tremendous task for the physician even with the assistance of the specialist and those who aid him. Assembling the necessary material may require the physician to spend a great deal of personal time, but it is time well spent. A businessman may spend a week taking an inventory of his business once a year. A physician can certainly afford to take a week or more to take an inventory of himself. Not only may the result accomplish the saving of tens of thousands of dollars in taxes, but it requires the physician to reexamine himself in his relationship with his professional associates and his family, to redetermine his aims in life, and to see the direction in which he has thus far traveled.

In addition to the documents which the analyst will prepare from his study, whether they be wills, trust agreements, deeds, or other documents, it is well for there to be a final instrument—one not destined for the eyes of the curious public, but one to be cherished by those one leaves behind. This is not an instrument in lawyers' language but one in the roughhewn stumbling words which bespeak the sincerity of the husband and father. For in this instrument, the last contact he will have with his family, the decedent can extend a hand of love from beyond the barrier of death. In this letter, let us call it, he reassures those who are suddenly bereaved of his presence, and left feeling wholly helpless, of his enduring love; he transmits courage to them in simple words, which they may reread over the years—things perhaps that one's tongue might stumble over when one attempts to speak them aloud. And, in this personal message, the physician can pass along his wisdom, the learnings from experience, the guideposts, and his suggestions to lessen the hurdles in the path of his widow and children. Perhaps his son is not sure whether he wants to be a physician. Schools change in stature. The physician's alma mater may have slipped by the time his son is ready. But the physician can suggest the name of a wise and true friend in his letter whom his son might consult about this problem when it arises. To my mind, a sincere message from Dad is as important as the lawyer's documents, however many thousands of tax dollars the latter might save.

One of the common faults of the American business or professional man is that he sets up false goals in life. He works too hard for that intangible thing which we call "success" or "security"—and primarily for the purpose of giving his wife and children more money than is good for them. Sometimes the process of estate analysis recalls these men to their original purposes in life and reestablishes the true value between financial and spiritual relationships. Many men, after a self-analysis, begin to relax more; they take more frequent and extended vacations; they learn to train and develop subordinates and members of their family in the conduct of their business; they pick up hobbies they had long since abandoned because of the pressure of other activities. They begin to plan for an active and satisfactory retirement, instead of the total cessation of all activity. One client sold his manufacturing business, which he had detested for 20 years, and purchased a small winter resort in Florida, where he will probably live many years longer. Conversely, one of my recent referrals is going to sell two hotels which he owns because "his wife can not take it easy with all that work to be done." People, as physicians know best of all, dig their own graves with their ambitions and nervous drives. The self-examination resulting in the process of estate analysis may be greatly beneficial. Almost without exception, the family of the client profits from his more relaxed attitude, making him a less tense and more enjoyable person to live with.

It is difficult for many men to realize what an insignificant gift money and property are, as compared to the love, companionship, and mental security they have to share when working under lower pressure. The man who does not sleep at night because of the problems on his mind is an unpleasant breakfast companion the following morning. The need for spiritual comfort and guidance is as great in our wives and children as their need for material things.

A few years ago, my daughter made a wish on a star. She asked, "Can I have anything in the world I want, Daddy?" I said, "Almost anything—what did you wish for?" She replied without a second's hesitation, "No more wars." Not money, not a pony—but peace! I felt pretty humble and ashamed of the mess we adults have made of our world, when a child's greatest wish is for no more wars.

Adults have those same tensions. A year ago Justice Robert Jackson was telling me how his hopes for a permanent peace, to grow out of the lessons learned from the trials of war criminals, were rapidly fading. Our wives and children have a vast mental insecurity caused partly by this problem of war, atomic bombs, and bacterial warfare. They have other tensions and conflicts raised by their relationships with other people, even by the mere problems of growing older. When the man of the family is dead, there is no one to share these problems, to smooth over their troubles, to give them strength and comfort. But if this man is so engrossed in his business or profession that it consumes his entire energies and time, then to his family what difference does it make if he is living or dead? He has abandoned their lives for a wholly separate one in which they have no place.

Omar Khayyam once well expressed it when he said, "The bird of time has but a little way to flutter and, lo, the bird is on the wing." The work of estate analysis is as much concerned with the art of successful living as it is with plans for death. The song which was so popular a year or so ago, "It's Later Than You Think," has a latent philosophy that some of us should not only recall to our clients and patients but to ourselves.

Perhaps the field of estate analysis might be summarized by saying that it is, first, basically a philosophy —a philosophy both for living and for death which works to solidify the relationships existing between a man and his family and to provide for the family's comfort after his death, but without destroying them

as persons. Second, estate analysis involves a financial or investment problem of solving the questions of economic security with minimum hazard, bearing in mind both retirement and death and the usual errors made by professional men trying to realize such objectives too quickly. Third, it involves family security in guarding against the inexperience of widows or young people in investing funds realized from inheritance, when deprived of the wisdom of the deceased. Fourth, estate analysis involves the reduction of administration expenses, estate, inheritance, and income taxes to the lowest possible sums consistent with sound planning—which may save many tens of thousands of dollars. Fifth, it requires sound administration provisions to anticipate and solve problems which inevitably will arise and to reduce the hardships incident to one's family on one's death.

Doctor, what plans have you made?

1314 W. University Ave.

COLOR TELEVISION AS A NEW MEDICAL-TEACHING AID

REPORT OF TWO AND ONE-HALF YEARS' EXPERIENCE

Kendall A. Elsom, M.D.
and
G. Frederick Roll, Philadelphia

Medicine was the first of the sciences to benefit from color television as a teaching aid. Its application in this field first took place in 1949 at the Annual Session of the American Medical Association in Atlantic City.[1] In the two and one-half years which have elapsed, 28 programs have been presented before medical audiences in this country and in Europe (Table). Over 200,000 physician visits have been made to these programs. The response of audiences to the medical color-television programs has left no doubt that this new medium can no longer be regarded merely as an interesting novelty but must be seriously appraised as a development in teaching which, although only partially explored, possesses far-reaching advantages.

In an effort to assess the future of color television in medical education and to gain a more specific conception of its special uses, limitations, and ultimate possibilities, it seems wise to review the experiences of the first two and one-half years of its employment.

HISTORY OF USE

The use of black and white television in teaching medicine and surgery apparently was recognized as a possibility before World War II, but the first formal program in this medium was not presented until the winter of 1947, when at the Johns Hopkins Hospital five operations were transmitted by television to receivers in classrooms during a meeting of the Johns Hopkins Medical and Surgical Association.[2] Later in the winter of 1947 a television program was presented at the Cleveland Clinic in connection with a postgraduate course—this program having been an outgrowth of preliminary experiments with this method of teaching begun in that institution as early as 1946.[3]

The next recorded use of television on a medical program occurred in May, 1947, when a symposium on cancer of the stomach was televised from the Creighton Memorial St. Joseph's Hospital in Omaha to an adjacent hotel.[4] The American College of Surgeons included television in the program of its Congress in New York City in September, 1947, during which a variety of surgical procedures was transmitted from the New York Hospital to the Waldorf-Astoria Hotel. At the 1948 Annual Session of the American Medical Association in Chicago, a television program was transmitted from the Passavant Memorial Hospital under the sponsorship of the Northwestern University Medical School and was received on the Navy Pier and in several hotels in downtown Chicago.[5] In October, 1948, a program was transmitted from the Hospital of the University of Pennsylvania to nearby Convention Hall as a part of the annual meeting of the Medical Society of Pennsylvania. Later in 1948 television was again employed at the Annual Congress of the American College of Surgeons held in Los Angeles and at the Clinical Session of the American Medical Association in St. Louis.

It became obvious from these early monochrome television programs that in order for this medium to achieve its fullest usefulness as a teaching aid color was a necessary addition. Various methods for introducing color were then in the developmental stage in the television industry. Consequently, in the fall of 1948 Smith, Kline and French Laboratories discussed with the Research and Engineering Laboratories of the Columbia Broadcasting System the possibility of manufacturing color-television equipment adapted for hospital use. As a result, a color-television camera and camera chain were especially built by the Research and Engineering Laboratories of the Columbia Broadcasting System, and color receivers were built according to Columbia Broadcasting System specifications by the Zenith Radio Corporation in cooperation with the Webster-Chicago Corporation. This equipment, owned by Smith, Kline and French Laboratories, has been used in all of the color-

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1. Television at Atlantic City Session, editorial, J. A. M. A. **140**: 1099 (July 30) 1949.
2. Trimble, I. R., and Reese, F. M.: Use of Television in Surgical Operations, Bull. Johns Hopkins Hosp. **81**: 186, 1947. Hague, J. E., and Crosby, E. L.: Television, Newest Aid in Teaching Surgery, Mod. Hosp. (No. 4) **70**: 65, 1948.
3. Ruedemann, A. D.: Use of Television in Medicine, Cleveland Clin. Quart. **14**: 145, 1947.
4. McCarthy, H. H.; McGuire, L. D.; Johnson, A. C., and Gatewood, J. W.: Telvision in Medical Teaching, Hosp. Progr. **29**:5, 1948.
5. Carroll, W. W.: Medical Television, Quart. Bull. Northwestern Univ. M. School **23**: 207, 1949.

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television programs subsequently sponsored by them. In preparation for the initial program, the equipment was given two weeks of preliminary testing in the Hospital of the University of Pennsylvania in May of 1949 and then installed in the Atlantic City Hospital and Convention Hall, where it was first used at the 1949 Annual Session of the American Medical Association. The reaction of the large audience at that meeting indicated that, rather than being a mere novelty, color television possessed great potentialities as an educational medium. As a result, it was included on the programs of a number of medical meetings throughout the country.

EQUIPMENT AND PERSONNEL

The equipment used employs the field sequential type of color television authorized by the Federal Communications Commission for commercial color-television broadcasts. It consists of a single camera, control and audio-equipment, and 20 color-television receivers. The camera was made spark-proof in order to insure safety in operating rooms. A built-in dolly enables the camera to be moved easily, and by virtue of its position on a 6-ft. boom it can be placed in any desired position in relation to the subject being televised. The receivers employ a 10-in. tube with a magnifying lens capable of producing a picture approximately 12 by 14 in. in size. With a picture of this size as many as 50 persons can be accommodated at each receiver. The transmission of the programs in almost all cases has been over a closed circuit by microwave radio relay.[6] If tall buildings or other obstructions exist between the transmitting and receiving points, the signals are redirected from some intermediate point. Where the distance between the transmitting and receiving sites has been less than ¼ mile, transmission has been accomplished through a coaxial cable. At the 1949 Clinical Session of the American Medical Association, held in Washington, D. C., the color-television program was transmitted from Johns Hopkins Hospital in Baltimore—a distance of some 40 miles. To insure quality of reception at this distance, the signals were amplified at a point halfway between the two cities.

Ordinary operating-room lights are adequate for televising surgical operations, although it is occasionally advantageous to supplement the overhead lighting with one or two portable spotlights. When medical clinics are televised in color, two portable banks of fluorescent lights provide diffuse lighting.

Three technicians are needed at the transmitting site —one man each at the camera, control panel, and audio-equipment. If 20 receivers are used, three technicians are required at the receiving point—two men to adjust the receivers and one man to monitor the signal as it is received. In addition, a physician having familiarity with television techniques as well as an understanding of the subject matter of the presentation is necessary, not only in the initial planning of the program but in directing the cameraman and in coordinating the program while it is on the air. Working with the physician coordinator is a floor manager, whose duties include the preliminary instruction of the speakers, the moving of "props," adjustment of lights, arrangement of microphones, and so forth.

Color-Television Programs that Have Been Presented Before Medical Audiences

Date	Location	Medical Society	Hospital
1949:			
June 6-9	Atlantic City	American Medical Association	Atlantic City Hospital
Sept. 21-23	Denver	Colorado State Medical Society	Denver General Hospital
Oct. 17-21	Chicago	American College of Surgeons	St. Luke's Hospital
Oct. 29	New York	American Cancer Society	Memorial Hospital
Dec. 6-9	Washington, D. C.	American Medical Association	Johns Hopkins Hospital
1950:			
Feb. 6-8	Atlanta	Atlanta Graduate Medical Assembly	Grady Memorial Hospital
Feb. 28-March 3	Chicago	Chicago Medical Society Association Conference	St. Luke's Hospital
March 27-29	St. Louis	Missouri State Medical Association	St. Louis City Hospital
April 18-21	Boston	American College of Physicians	Massachusetts General Hospital
May 1-3	Fort Worth	State Medical Association of Texas	St. Joseph's Hospital
June 26-29	San Francisco	American Medical Association	Veterans Hospital
Oct. 2-4	Washington, D. C.	Medical Society of District of Columbia	Gallinger Hospital
Oct. 16-18	Philadelphia	Medical Society of Pennsylvania State	University Hospital
Oct. 23-27	Boston	American College of Surgeons	Massachusetts General Hospital
Nov. 1-3	Cleveland	International College of Surgeons	Charity Hospital
Nov. 15	Detroit	Wayne University College of Medicine Postgraduate Seminar	Grace Hospital
Dec. 5-7	Cleveland	American Medical Association	Lakeside Hospital
1951:			
Feb. 5-8	Atlanta	Atlanta Graduate Medical Assembly	Grady Memorial Hospital
March 5-8	New Orleans	New Orleans Graduate Medical Assembly	Charity Hospital
March 16-17	Philadelphia	Wills Eye Annual Conference	Wills Eye Hospital
April 9-12	St. Louis	American College of Physicians	St. Louis City Hospital
April 14	St. Louis	St. Louis Gynecological Society	St. Louis City Hospital
April 23-25	Kansas City	Missouri State Medical Association	Kansas City Municipal Hospitals
April 30-May 2	Galveston	State Medical Association of Texas	St. Mary's Infirmary
May 9-11	Denver	Rocky Mountain Medical Conference	Denver General Hospital
June 11-14	Atlantic City	American Medical Association	Atlantic City Hospital
June 20-22	Montreal	Canadian Medical Association	Royal Victoria Hospital
Sept. 24-29	Paris	International Society of Surgeons	Boucicaut Hospital

6. All programs have been transmitted over facilities installed by the Bell Telephone Company.

TECHNIQUE OF COLOR TELEVISION PRESENTATIONS

It is our belief that color television will assume an increasingly important role in medical teaching in the years to come. For this reason it seems important to call attention to some of the special techniques in teaching which are required in the use of this new medium, since

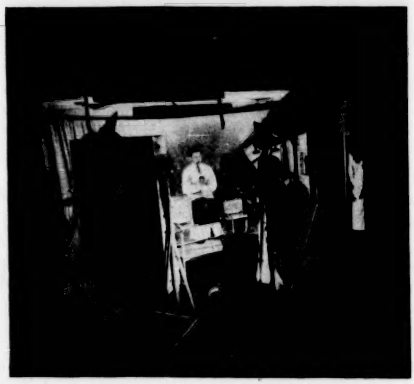

Fig. 1.—An improvised "television studio" in an operating room of the Johns Hopkins Hospital. During the 1949 Clinical Session of the American Medical Association, the first intercity color broadcast occurred between Baltimore and Washington, D. C. For nonsurgical presentations two banks of fluorescent lights provide diffuse lighting of the area occupied by the speaker, patients, and other things. The color camera is seen in the center of the picture. The speaker is provided with a collar-type microphone.

in some respects they differ radically from the traditional methods now in use. Capt. David Hawkins, Director of Audiovisual Training for the Third Naval District, speaking of naval training by means of television stated the problem succinctly when he said recently,[7]

> The great difficulties in teaching by television are finding the right instructor for television and adapting the lesson to the medium to take full advantage of its possibilities. All actors are not instructors and all instructors are decidedly not actors. The ideal would be an instructor thoroughly familiar with his subject and thoroughly at home before the microphone and camera.

Surgical Clinics.—In the teaching of operative surgery by means of color television, very little modification of present practices is required. Our experience in this regard has revealed a few points worthy of mention. Most surgeons apparently miscalculate the size of the surgical field visible to the television audience. This is usually so small that only the actual site of operation can be observed. The spectators cannot at once visualize the position of the patient or the actual location of the operative site. It is important, therefore, for the surgeon to demonstrate any landmarks, and to indicate whether the camera is placed at the head, foot, or to the side of the patient. This orientation of the audience avoids much confusion. The surgeon who is accustomed to operating before an audience seated in an amphitheater has developed the habit of pitching his voice to be heard by the audience and lowering it to make remarks to be heard only by the operative team. On television this habit can cause him some embarrassment until he learns that the small microphone placed between the layers of his mask picks up the slightest sound. Whispered commands give an impression of nervousness or irascibility on the part of the surgeon which is not conveyed if he speaks in his usual voice. Actually, one of the great attractions of television to his surgical confreres in the audience is the unrehearsed, unedited informality with which the surgeon meets the vicissitudes of the moment.

Many surgical presentations are slightly marred by the inadequate demonstration of pathological specimens removed at operation. These are frequently demonstrated at some distance from the site of operation, where the lighting is poor and the focus of the camera must be changed in such haste that the spectators do not obtain a satisfactory view. If a towel is placed over the incision and the specimen examined very deliberately without moving it unduly, a good view is usually assured. Since the television camera is placed 2 or 3 ft. above the site of operation, it is inevitable that the surgeon or his assistants occasionally obscure the view for short periods. When this occurs, an intercommunication system permits the monitor to inform the surgeon, who soon develops an awareness of the position of the camera, which usually obviates the difficulty.

Most surgeons with teaching experience give very effective presentations without radical alteration in their habitual methods of operating-room teaching. A running commentary by the surgeon should keep the audience constantly oriented as to the details of the operative technique which are being observed at a given moment. This commentary need not be continuous, provided the audience is kept informed as to the purpose and technique of some future steps which may absorb the entire attention of the surgeon. If at some stage in the operation

Fig. 2.—A view of the operating room during a color-television program. The camera is seen in the upper right-hand portion of the picture. It is approximately 1½ ft. above the heads of the operative team and does not interfere with their movements.

time must be devoted to an obvious step, such as tying off many hemostats, an opportunity is presented for the discussion of unrelated subjects such as the history, physical findings, indications for operation, mortality statistics, postoperative care, and the like. Use of this time avoids such commentary at a time when the audience

7. The New York Times, Feb. 18, 1951.

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would prefer to concentrate on watching the technical procedures then being performed.

When a program of operative clinics is planned, it has, in general, been found desirable to limit the television presentation to those procedures which are essential from the teaching standpoint and to eliminate such routine steps as the opening and closure of the wound. In the average three-hour program it is usually possible to schedule five major operative procedures. This usually necessitates the use of two and occasionally three adjacent operating rooms, so that at the end of one procedure either the camera can be moved immediately to the next patient, in whom the preliminary steps of the operation have already been carried out, or the patient, prepared in one of the adjacent operating rooms, can be moved under the camera.

Medical Clinics.—The effective presentation of a medical clinic requires techniques which are unfamiliar to most teachers. The selection of material which is well adapted to the medium in use is of the utmost importance. Insofar as possible, material which lends itself to pictorial presentation should be selected, since it is only here that color television contributes to the effectiveness of its presentation. A didactic lecture utilizes none of the peculiar advantages of television and not only gains nothing but suffers the serious defect of seeming to place the speaker abnormally close to the audience, who soon find this somewhat distracting. Our experience has amply demonstrated that the television audience does not feel bound by any sense of courtesy to the speaker and will soon depart if the picture on the screen is not interesting. Clinics proving of great interest because of their pictorial value have dealt with such subjects as the administration of shock therapy, biopsy methods, cardiac catheterization, the handling of radioactive isotopes, the demonstration of dermatological lesions, fresh autopsy material, and the like. Presentations built around demonstrations with patients are almost uniformly successful, whether they show, for example, the classical facies in endocrinological disease or depend on interviews in which interesting histories are elicited or the patient's reactions to certain forms of treatment, and so forth, are discussed. A number of clinics which have been particularly successful come to mind, a few of which may be mentioned at random: the development of methods of speech following laryngectomy, the results of corticotropin (ACTH) or cortisone treatment in cases of rheumatoid arthritis, the results of ileostomy in cases of ulcerative colitis, the care of a colostomy patient, the postoperative results in operations for congenital heart disease, and so forth. All are subjects in which participation of the patients has added to the interest of the clinic.

While the use of color transparencies, lantern slides, charts, and x-rays all have a place, a presentation which consists solely of them fails to utilize to the fullest the inherent advantages of the medium of color television and fails to sustain the interest of the audience. Many speakers make the error of assuming that the usual lantern slides, charts, graphs, and so forth can be used either from the platform or before a color-television camera. This assumption does not take into account the important difference that visual material is ordinarily enlarged by projection to a screen but is reduced on the television receiver. The lettering, legends, and so forth on lantern slides and charts are, therefore, frequently illegible on the television screen. Charts are frequently too complex to be grasped quickly by the audience, and the method of colors to differentiate data is rarely utilized. Charts for use in television should be as simple as possible, approximately 2 by 3 ft. in size, and with heavy block lettering which should be at least 1½ in. high. Color should be used wherever it is appropriate. It has proved effective to use a blackboard and to construct a diagram or chart step by step rather than to show a previously prepared chart. This introduces the data to the audience one item at a time, which minimizes confusion, and, more important, is likely to discourage the speaker from attempting to construct a too complicated chart or diagram.

It has been interesting to observe that many of the mannerisms of speakers are accentuated before a television camera. Many clinic presentations are marred by the tendency of the speaker to sway from side to side, to walk about while speaking, or to move forward and backward. All of these present problems for the camera operator and give a disconcerting impression to the audience, since the close-up position of the camera not only exaggerates the movements of the speaker but causes him to get in and out of focus. With a little practice these defects are easy to correct; the speaker can train himself to stand quietly and look into the camera lens, rather than seem to avoid his audience.

Fig. 3.—A view of the color-television demonstration for the Annual Session of the American Medical Association in San Francisco, June, 1950. More than 12,000 physician visits were recorded during the four-day color-television program, which was transmitted from Ft. Miley Veterans Administration Hospital to the Masonic Temple.

AUDIENCE EVALUATION OF MEDICAL COLOR TELEVISION

After the annual session of the Missouri State Medical Association in St. Louis, March, 1950, a survey of the attending physicians was conducted to determine their opinion of the effectiveness of color television in postgraduate teaching of surgery. Of 116 physicians who answered the questionnaire, 91% preferred to watch surgery on color television rather than from an operating-room amphitheater, and 52% preferred to observe an operation on color television rather than from a place beside the operating table. The further effectiveness of color television in medical teaching was attested to by a survey conducted the following month during the annual session of the American College of Physicians in Boston, April, 1950. This survey, although not recorded statistically, indicated that the great majority of fellows desired an expansion of the television portion of coming programs.[8]

8. Loveland, E. R.: Personal communication to the author.

In November, 1950, a two-day postgraduate seminar, presented by the Wayne University College of Medicine and the staff of the Grace Hospital in Detroit, was given entirely by means of color television. The audience was made up largely of general practitioners. After this seminar Wayne University College of Medicine sent out 500 questionnaires, of which approximately 350 were returned.[9] The findings were that (1) 96% expressed a preference for watching surgery by means of color television, as compared with viewing it from an amphitheater; (2) 85% expressed a preference for a clinical presentation on color television, as compared with the conventional paper read from the platform; (3) 42% of this audience considered diagnosis the subject matter of greatest interest, 38% treatment, and 20% the new advances in research.

FUTURE OF COLOR TELEVISION

The use of color television in medicine has been limited thus far to postgraduate teaching before large audiences at medical meetings. It has not yet been possible to determine its place in routine undergraduate teaching. Greatly simplified equipment is now being manufactured,[10] which will reduce the initial and upkeep costs and the personnel requirements for the use of color television in medical schools. Future experience alone will indicate its proper place in intramural teaching. Certainly in surgery and dermatology its advantages have been amply demonstrated. While the growing tendency to teach in small groups reduces the necessity for television, many lectures, clinics, and demonstrations are still given to large audiences which could be more effectively presented by television. In the field of postgraduate teaching apart from formal meetings, color television presents its most challenging possibilities. With the recent nationwide extension of microwave radio relay towers, it is now possible for a medical program to be transmitted over a closed circuit, from New York City, for example, and be received simultaneously by physicians gathered in groups in various cities across the country. In addition, if the Federal Communications Commission were to allocate broadcast channels for educational purposes, one can visualize regularly scheduled programs from medical centers reaching the physician in his home or office on a practical basis. Since it would be undesirable for these programs to be available to the laity, a "scrambling" mechanism, such as that devised by the Zenith Radio Corporation for use in so-called "Phonevision," could be utilized. Such a device so distorts both image and voice that they are unintelligible unless they are "unscrambled" in the receiving set. By making available the device for "unscrambling" only to those accredited by their local medical societies, for example, control over the broadcast could be maintained.

SUMMARY

Since its introduction into medical teaching by Smith, Kline and French Laboratories, color television has been employed in 28 medical meetings in the past two and one-half years. Over 200,000 physician visits to these programs have been recorded. Color television is no longer a novelty which in itself attracts attention but can now be judged on its merits as a new medium for medical teaching. The response of physicians who have observed color television leaves no doubt that the medium is an effective teaching aid, the potentialities of which have only begun to be explored. The use of this medium will require the development of new techniques which deserve the attention of teachers of medicine. The value of color television in teaching large groups at medical meetings has been amply demonstrated. The adaptation of the method to informal undergraduate teaching is now needed. To provide color television to the physician in his home or office for purposes of postgraduate teaching is a problem for the future.

36th and Spruce St. (Dr. Elsom).

9. Scott, G.: Personal communication to the author.

10. The Remington Rand Company, under an agreement with the Columbia Broadcasting System, produces color-television equipment for medical teaching. The availability of such equipment is not affected by the recent directive of the Office of Defense Mobilization restricting the manufacture of color-television receivers.

CLINICAL NOTES

THIOCYANATE PSYCHOSIS

H. J. M. Barnett, M.D.
M. V. Jackson, M.D.
and
W. B. Spaulding, M.D., Toronto, Canada

This is a presentation of seven cases of thiocyanate psychosis, two of which were fatal, one having been studied at autopsy. An additional case of combined bromide and thiocyanate intoxication is described. The literature has been reviewed with regard to the toxicity of thiocyanate in the treatment of hypertension; in particular, reports of fatal cases have been examined.

During the last half-century medical observers have argued for and against the use of thiocyanate. From a perusal of the voluminous literature that has accumulated only two things seem firmly established: 1. Its effectiveness, either as a symptomatic remedy or as a drug useful in reducing blood pressure, is by no means generally accepted. 2. Toxic manifestations are relatively common.

Having fallen into disrepute about 25 years ago, thiocyanate came into favor again in 1936 when Barker [1] described a rapid and easy chemical method of following the blood level accurately. He maintained that undesirable side-effects were infrequent with careful follow-up blood studies. However, because of the inconvenience of recording repeated blood levels and the disagreement regarding its usefulness, thiocyanate has remained a relatively minor tool. A more extensive trial can be expected again because of recent favorable comments by Ameri-

From the Department of Medicine, University of Toronto, and the Medical Service of the Toronto General Hospital (Dr. Barnett and Dr. Spaulding), and the Department of Psychiatry, University of Toronto, and the Toronto Psychiatric Hospital (Dr. Jackson).

1. Barker, M. H.: The Blood Cyanates in the Treatment of Hypertension, J. A. M. A. **106**: 762 (March 7) 1936.

can,[2] British,[3] Australian,[4] and Canadian [5] writers. However, despite the fact that these authors invariably stress the necessity for close observation of patients being treated with thiocyanate, our experience indicates that the warnings may go unheard or unheeded partly because some current commercial advertising may fail to mention well-recognized contraindications to therapy and may make misleading statements regarding the potential toxicity of thiocyanate.

CLINICAL USE OF THIOCYANATE

Although authorities have outlined careful programs that include dosage, clinical observation of patients, and frequent measurement of serum levels, it is necessary to emphasize that none of the patients discussed here had been adequately followed by their physicians in all these respects. None had had serum levels estimated; at least one had been given an excessively large dose; and others, because of mental confusion, might have taken more than was prescribed. Ayman,[6] Hines,[2] and Connell and associates [5] have recently summarized what they regard as the indications for the use of thiocyanate and their program for its administration. An average recommended dose (Ayman) is 3 grains (0.20 gm.) three times daily for three days, then twice daily for four days, the maintenance dose to be determined by the serum level at this stage. The daily dose required to maintain a satisfactory level varies from one person to another, and therefore its estimation requires careful study of the patient. The maintenance dose would average between 3 and 6 grains (0.20 and 0.40 gm.) daily. Serum levels should be measured at least fortnightly, the aim being a range of 8 to 10 mg. of thiocyanate per 100 cc. of serum, but levels up to 12 mg. are permissible. These serum levels are said to give optimum effect with minimum toxicity.

THIOCYANATE TOXICITY

Apart from varying individual reactions to given doses of the drug, certain other factors should be kept in mind. There is evidence that patients who are light in weight require less of the drug than heavier patients.[5] The presence of renal disease affects excretion, causing the drug to reach dangerous levels rapidly. The drug diffuses itself through all intercellular fluids, and if cardiac or renal edema is present the drug may be stored in large quantity even though the blood level is deceptively low. A sudden diuresis would then raise the concentration of the drug to dangerous levels. It should never be used, therefore, for patients with heart failure and should never be given before a good clinical assessment of renal function has been made. It has furthermore been claimed—and the premise for the claim is reasonable—that a history of previous brain damage or evidence of existing abnormality in cerebral function should lead to very cautious use of the drug, if not to its complete exclusion. Despite all these precautions, there are a number of persons in whom toxic symptoms may appear at therapeutic levels; we and others have encountered even the serious psychotic complications at or near "therapeutic levels."[7]

Toxic manifestations are to be found in nearly all organ systems. Kessler and Hines [7] believe that they can divide the adverse symptoms into two general groups: (1) those that occur within the therapeutic range, and (2) those that are due to excess accumulation of the drug. In the former group, depressed bone marrow function and hypothyroidism are the most serious; fatigue, anorexia, and nausea the commonest. In the latter group, varying degrees of depressed cerebral functions are the major complications. Skin reactions varying from maculopapular eruptions to purpura and exfoliative dermatitis occur in both groups. Thrombophlebitis and coronary and cerebral thrombosis, cited as complications of the therapy, are more difficult to distinguish from the natural sequelae and complications of the underlying vascular disease. An interesting symptom is a peculiar aching of the legs and body attributed to osteoporosis.[2] The mode of production of most of these toxic complications is totally unknown, just as is the mode of therapeutic action of the drug.

The fatal cases reported in the literature were collected by del Solar and associates [8] in 1945. In several instances death followed the taking of thiocyanate for suicidal purposes, but seven patients died of the toxic effect of the drug while it was being given as therapy. Ayman [6] has pointed out that five of these had advanced impairment of renal function prior to therapy and that data in the other cases were inadequate in this regard. In the fatal case added by del Solar and associates, there was pathological evidence of chronic renal damage upon which a necrotic nephrosis was superimposed. In reviewing their management of the patient, we noted that restlessness was controlled with bromide. This drug is known to produce a toxic psychosis, which in our experience is indistinguishable from thiocyanate psychosis; therefore, bromide should be avoided in the management of the latter. One further fatal case has been reported, by Kessler and Hines. The patient, at death, was distinctly icteric and affected with a generalized exfoliative dermatitis. Postmortem examination disclosed extensive centrolobular necrosis of the liver, arteriolar nephrosclerosis, and cerebral edema. In all the fatal cases the toxic symptoms appeared after short periods of administration of the drug. Furthermore, in several of the cases reported there was an abrupt rise in the serum concentration from a "safe" to a dangerous level coincident with the onset of symptoms of toxicity. This phenomenon is not predictable by diligent observation of serum levels. However, it may be that more careful selection of patients for treatment with thiocyanate, excluding those with severe cardiac, renal, or cerebral damage, would reduce the likelihood of rapid, treacherous increases in thiocyanate retention.

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SOURCE OF MATERIAL

In the cases reported here, the patients were all presented as diagnostic problems in either the Toronto Psychiatric Hospital or the Toronto General Hospital, with a confusional psychosis as the outstanding feature. In every instance thiocyanate had been given in sporadic, casual, and uncontrolled fashion.

REPORT OF CASES

CASE 1.—E. C., aged 63, was admitted to the Toronto Psychiatric Hospital on May 11, 1941, because she refused food and drink, believing them poisoned. Relatives described her as a difficult person, habitually tyrannical and cruel but becoming more eccentric and suspicious as she grew older. About four months before admission her memory had become poor; she misidentified people, tended to live in the past, and became untidy. Her physician reported that she had been instructed to take 2½ grains (0.15 gm.) of sodium thiocyanate three times daily for a four-day period and to repeat this routine at intervals of a week to ten days for three months. There were no complaints referable to cardiovascular disease volunteered by the patient. Three days before admission she could not walk without staggering. The next day confusion was marked, and delusional thinking governed her behavior. The family described urinary incontinence, inability to swallow, and dribbling of fluids down the side of her face. She was sleepless and muttered to herself constantly.

On admission she was confused and disorientated, with slurred speech, rambling conversation, and urinary incontinence. Fluids dribbled from her mouth. The blood pressure was 200/106 mm. Hg, but the heart was clinically normal. The retinal vessels were tortuous and narrowed. There was slight lower left facial weakness. The serum cyanate level was 16 mg. per 100 cc.; serum bromide level, normal. During hospitalization the highest recorded urinary specific gravity was 1.011, but in a two-hour test it ranged from 1.002 to 1.005. The blood pressure varied from 200/106 to 162/80.

She was difficult to nurse because of the intensity of her auditory hallucinations and delusions of persecution. The neurological signs disappeared within 48 hours of admission but it was not until the serum cyanate had reached a level of 2 mg. (June 6) that the delirium subsided. A residual memory defect of a mild character persisted at the time of her discharge on July 5.

A follow-up examination a year later revealed she was frequently confused, very forgetful, and had night frequency, which confirmed the progression of cerebral and kidney damage. She died on Feb. 11, 1945.

The patient showed evidence, both before and after her delirium had subsided, of cerebral arteriosclerosis. She did not come out of her psychosis until her serum cyanate level was down to 2 mg. Because of her failing memory she probably had not followed her physician's instructions regarding her medication. Unfortunately, the only indication for the thiocyanate treatment had been the symptomless hypertension. During the most toxic period she presented transitory focal and neurological signs.

CASE 2.—M. M., aged 50, was admitted to the Toronto Psychiatric Hospital on Dec. 18, 1941, in a wildly delirious state. She was a widow, stable, with few interests outside of her factory work. On Nov. 19, 1941, she had had an attack of vertigo followed by vomiting, and examination the next day had revealed a hypertension of 220/105. Sodium thiocyanate (2½ grains [0.15 gm.] three times daily for five days) was prescribed, and then the administration was reduced to twice daily. On Nov. 28 the blood pressure was 160/98, and by Dec. 3, she became confused and irritable, misidentified sounds and people, and thought that animals were crawling over her body. Cyanate medication was discontinued Dec. 11, but her symptoms worsened until admission to the hospital.

She arrived in a very disturbed mental state. The blood pressure was 154/80 on admission and ranged between 164/96 and 126/62 during hospitalization. The heart was normal apart from electrocardiogram evidence of left ventricular preponderance. The specific gravity of the urine ranged from 1.004 to 1.030. The nonprotein nitrogen level was 28 mg. and the serum cyanate level, 24 mg. per 100 cc. No bromide was present. On Dec. 24 the serum cyanate level was 13 mg. per 100 cc. and cerebrospinal fluid cyanate level, 1.4 mg. per 100 cc. Fluids were forced, but the delirium did not subside until the serum cyanate level had been reduced to 5 mg. The patient remained in the hospital until Jan. 24, 1942, when a slight residual memory defect was noted.

On follow-up examination, Nov. 8, 1944, this memory defect was still present but not marked; there had been a gradual lessening of initiative and interest, but there were no symptoms referable to hypertension.

The patient died on April 29, 1946, after having suffered several "strokes." No autopsy was performed.

A 50-year-old woman was given thiocyanate in standard dosages to reduce blood pressure after an attack of vertigo. She became delirious within 13 days of the beginning of the therapy, and the delirium increased in severity for a week after treatment with the drug was stopped. On recovery there was a mild memory defect, which had not been noted before thiocyanate was prescribed. She had been employable prior to her taking of this medicine.

CASE 3.—E. T., a 65-year-old woman, was admitted to the Toronto General Hospital on Aug. 10, 1942, because of unexplained deepening stupor.

For more than five years she had been known to be hypertensive but free of symptoms related to cardiovascular disease. On July 29, 1942, she had experienced dizziness with a frontal headache. The next day she felt worse and consulted a physician, who, finding her blood pressure elevated, prescribed 6 to 9 grains (0.40 to 0.6 gm.) of sodium thiocyanate every three hours. The medication was maintained for the 12 days prior to admission. Symptoms had remitted until Aug. 7, when she became weak, dizzy, and tremulous. During the next three days her mental state was one of increasing retardation with slow, thick, incoherent speech and deepening stupor.

The admission examination revealed a semicomatose woman, who screamed in protest against attempts to turn her in bed. There was a blood pressure of 178/80 and moderate cardiac enlargement. The serum cyanate level taken on the fourth hospital day was 36 mg. per 100 cc.; the patient's mental state had reverted to normalcy except for slight drowsiness.

The serum contained concentrations of 36, 20, 15, 11, 10, and 8 mg. per 100 cc. on the 4th, 8th, 10th, 12th, 16th, and 17th days, respectively. Urinary levels were 24, 19, 6, and 2 mg. per 100 cc. on the 9th, 12th, 13th and 16th days, respectively. A Mosenthal test showed a specific gravity of from 1.017 to 1.024. The serum contained no bromide on the fourth day. Serial blood pressures varied between 180/90 and 152/70.

The patient was discharged from the hospital on Aug. 30, 1942, free of symptoms.

This patient was given an excessive dose of thiocyanate, and an increase in the severity of her symptoms of weakness and dizziness developed. Such complaints have been stressed by some authorities as due to hypertension, but it should be noted that drug intoxication produces a similar picture before delirium results.

The diagnosis was not made for four days, because no drug intake was suspected. Cyanate delirium should be considered whenever mental symptoms are developing in a hypertensive patient.

CASE 4.—E. C., aged 60, was admitted to the Toronto Psychiatric Hospital on Dec. 29, 1942, because he was wildly disturbed at home, had tried to choke his daughter, and had attempted to

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throw furniture out the window. He was a rather quick-tempered, stubborn, overly conscientious man, who had no close friends or hobbies; but his family had found him pleasant. After a "weak spell" he had been examined in a medical clinic on July 10, 1942. The blood pressure was found to be 240/140, and there was a gallop rhythm with no sign of heart failure. A diagnosis of hypertensive heart disease was made.

From July until early December he was well and working; then he became more fatigued and increasingly short of breath. During the few days before admission his family noted restlessness, periodic confusion, and forgetfulness. The morning preceding admission he claimed he could hear strange people talking in the house, and later he suddenly became very disturbed and violent.

On admission, he was unconscious, having been heavily sedated. The blood pressure was 200/98-80, and the heart was enlarged. Because of hypertension and a history of delirium the serum cyanate level was checked and found to be 30 mg. per 100 cc. Other laboratory findings were nonprotein nitrogen level, 82 mg. per 100 cc.; blood sugar, 160 mg. per 100 cc., and cerebrospinal fluid, normal.

His physician was contacted, and he reported that in mid-December the patient's blood pressure had been 250/140. Five grains (0.30 gm.) of sodium thiocyanate, three times daily, had been prescribed and had been taken for 8 to 10 days before his coming to the hospital.

During the first hospital day the patient roused somewhat. Later his condition worsened, and his temperature rose to 104 F. He died rather suddenly, less than 48 hours after admission. His wife refused autopsy.

This patient was given only 15 grains (1 gm.) of sodium thiocyanate daily for 8 to 10 days, but a highly toxic serum level of 30 mg. per 100 cc. was found on admission. The violent behavior illustrates the severity of the mental reaction that may result from the use of the drug. The patient's illness presented a diagnostic problem because initially no history of thiocyanate medication was elicited. Nonetheless, the nature of the psychosis was suspected because of the combination of an acute delirium and hypertension. Examination of the serum confirmed the diagnosis before further information was obtained from the family physician. The sudden death with preceding pyrexia was compatible with brain stem congestion and edema as described in other patients on whom autopsies have been performed.

CASE 5.—A. C., aged 55, was admitted to the Toronto Psychiatric Hospital on Feb. 10, 1943, because she was extremely apprehensive and suspicious, and heard voices and sounds that terrified her.[9]

She had been a happy, stable person. Two years before admission she had consulted a physician because of general fatigue. A blood pressure of 235/135 had been discovered. In January, 1943, she was dizzy and again consulted a physician, who found a blood pressure of 250/140. He prescribed 5 grains of sodium thiocyanate three times a day and at bedtime, beginning Jan. 29. By Feb. 8 she had become confused and tearful, and was unable to enunciate her words clearly. Her blood pressure was then 185/115. Cyanate therapy was discontinued, but her mental state became worse. Her conversation was jumbled; she shouted out and thought she was being poisoned. She said that she saw devils and accused her nurse of filling her with electricity.

On examination she was dehydrated; the blood pressure was 140/88, and the heart was clinically normal. Urinalysis showed the urine contained albumin 2+, there were no casts, and the specific gravity was 1.024. Because of the delirium, the cyanate, bromide, and nonprotein nitrogen blood levels were checked and found to be 20 mg. per 100 cc., 0, and 73 mg. per 100 cc., respectively. The serum cyanate level gradually fell to 12 mg. by Feb. 22 and to 2 mg. by March 3. The nonprotein nitrogen level returned to normal by Feb. 22.

The patient continued to be very noisy and restless until definite improvement began on the eighth day. By the 18th day she was mentally clear, and the serum cyanate level was 5 mg. per 100 cc. The blood pressure varied between 140/85 and 196/112-104, but during the week before discharge (March 6, 1943) it was 180-190/100-120.

Since the patient left the hospital, her niece reports that she has remained well physically and mentally, is contented and alert, travels alone, has not sought employment, but assists with the housework. In a letter to her niece dated February, 1950, the patient reported that her blood pressure had risen to 230.

After 10 days of standard thiocyanate therapy serious mental symptoms arose. The clinical state deteriorated after cessation of medication. The symptoms for which she had been given cyanate were trivial, and by 1950 she had carried on without therapy for seven years. It would seem unsound to administer a potentially dangerous drug to a patient such as this, whose hypertension continued uneventfully for seven years.

CASE 6.—J. J. L., aged 69 years, was admitted to the Toronto Psychiatric Hospital on June 4, 1944, because he was confused, thought people were chasing him, and screamed for police protection.

On recheck examination for a chronic asthmatic condition on May 17, 1944, the patient's physician had found a blood pressure reading of 234/110 and had prescribed 2½ grains of sodium thiocyanate twice daily. By the seventh day of treatment the patient was very talkative and confused, from which time the intensity of his delirium increased.

On admission he was confused, resistive, and noisy. Examination disclosed dehydration, scattered rhonchi in his chest, a blood pressure of 140/80, and a clinically normal heart. The serum cyanate level was 32 mg. per 100 cc.; nonprotein nitrogen level, 61 mg. per 100 cc.; bromide level, normal. Urinalysis showed albumin 2+ with specific gravities of 1.014 to 1.019.

The patient was given intravenous fluids and tube feedings but continued to be a very difficult nursing problem. The serum cyanate level was 25 mg. per 100 cc. on the fifth hospital day. The next day he suddenly became cyanosed, and death occurred rapidly.

Autopsy[10] revealed arteriosclerosis of the large and small arteries throughout the body, with the characteristic arteriolar changes of benign hypertension. The kidneys were shrunken, scarred, and pitted, and weighed only 60 and 75 gm., respectively. The heart was not enlarged, weighing 370 gm. There was slight hypertrophy of the wall of the left ventricle (1.8 cm.). Distinct emphysema was present with bullous formation.

The brain weighed 1,410 gm. and exhibited frontal gyral atrophy but was moderately edematous. The superior cerebral veins were congested. The pons and medulla were severely congested and edematous, so that the former bulged well forward and was soft even after fixation. Microscopically there was evidence of severe arteriolar sclerosis throughout all parts of the brain. The gross appearance of medullary and pontine edema and petechial hemorrhages was confirmed. Some of the latter were in the floor of the fourth ventricle and the lateral walls of the third ventricle.

This patient's psychosis was evident by the seventh treatment day, and he was dead approximately two weeks later. Distinct brain-stem edema and nephrosclerosis were the chief autopsy findings. The case demonstrates the danger of thiocyanate therapy without adequate assessment of renal function. Elderly hypertensives are more liable to have significant renal damage and accordingly should be examined carefully.

CASE 7.—M. K., aged 50 years, was admitted to the Toronto General Hospital on Dec. 6, 1949, in a greatly confused mental state.

9. This case of thiocyanate damage was reported by Dewan, J. G., and Owen, T.: Mental Illness and Principles of Medicine, Canad. M. A. J. 52: 349 (April) 1945.

10. Prof. E. A. Linell, of the Department of Neuropathology, Banting Institute, University of Toronto, has allowed us to use the autopsy report of this case.

Two and one-half years previously she had suddenly suffered right-sided paralysis with aphasia and disorientation. For five weeks catheterization had been necessary. Recovery had been gradual, the only residuum being a feeling of strangeness in the right side of the body.

Five weeks prior to admission she had consulted a physician, who, finding a blood pressure of 240/120, had prescribed sodium thiocyanate. This drug was taken in doses totaling 7½ grains (0.50 gm.) daily from Nov. 7 to Nov. 14, then 10 grains (0.60 gm.) daily until Nov. 24, and finally 7½ grains daily until the patient entered the hospital 12 days later.

About two weeks before admission her movements became incoordinated and her speech, slurred. She was disoriented, and confused, and had urinary retention.

Admission examination showed a bewildered woman, hallucinated in the auditory field. Her mood was labile, changing quickly from laughter to tears. She was dysarthric and had difficulty carrying out simple commands. The retinal arterioles were narrowed. The blood pressure was 160/90 and the heart enlarged, with a loud precordial systolic murmur. Brisk tendon reflexes in the right leg with a positive Babinski reflex were interpreted as residual from the previous hemiplegia. On the second hospital day the serum cyanate level was 39 mg. per 100 cc. No bromide was present in the blood serum.

After the first week, improvement occurred to the point where she was aware that she was in the hospital but was confused as to time. On the 10th day her mental state had returned to normal. Inability to urinate persisted until the fourth week, at which time, despite the finding of an atonic bladder on cystometrography, she could urinate well enough that the residual urine measured only 10 cc. Serial serum cyanate levels were 39, 29.5, 28, 17.5, 16, 14, 10, 6, 4, and 1.5 mg. per 100 cc. on the 2nd, 3rd, 4th, 5th, 6th, 11th, 14th, 15th, 17th, and 21st hospital day, respectively. The cerebrospinal fluid contained 14 mg. per 100 cc. of cyanate on the second day, and a trace on the 22nd day. Serial blood pressures ranged between 140/105 and 130/70.

She was discharged from the hospital on Jan. 9, 1950. Follow-up examinations in the outpatient department have revealed an alert, happy woman, able to do her own housework and having a symptomless hypertension.

A woman with definite evidence of residual hemiplegia was given thiocyanate for four weeks, and a state of delirium developed after two weeks of therapy. The serum cyanate level on admission to the hospital was 39 mg. per 100 cc., and the cerebrospinal fluid level, 14 mg. per 100 cc. The drug was prescribed on the basis of a single blood pressure reading. During the development of toxic symptoms thiocyanate may be continued by a physician who mistakes an onsetting psychosis for manifestations of hypertensive encephalopathy.

CASE 8.—N. B., aged 59 years, was admitted to the Toronto Psychiatric Hospital on March 27, 1940, because she was confused, excited, and visually hallucinated. An asymptomatic hypertension (210/120 to 170/100) had been detected in the course of a routine physical examination in January, 1935. In January, 1940, she showed increased anxiety about money and dislike of living with her children. Because of insomnia and crying spells, a physician prescribed a bromide mixture. (No doctor admitted prescribing cyanates.) At first the bromide promoted natural sleep, but during the three weeks before admission she became increasingly drowsy. Two weeks before coming to the hospital she staggered, muddled her speech, cried frequently, and thought she would die. Three days before admission she was much worse: fearful, noisy, restless, and claiming she saw men with scissors who were trying to cut her into pieces. She heard the rushing of waters and thought they would all drown.

On admission she was ataxic, confused, stuporous, and unable to feed herself. She then became more noisy, restless, and vividly hallucinated as the stupor lifted. Her blood pressure was 165/100; serum bromide level, 290 mg. per 100 cc.; serum cyanate level, 15 mg. per 100 cc.; nonprotein nitrogen concentration, 35 mg. per 100 cc. Urine concentrated to a specific gravity of 1.035.

On the fourth hospital day the patient was mentally clear. The serum bromide level was then 120 mg. per 100 cc.; the serum cyanate level, zero.

The patient was discharged one month after admission. She continued to have a persistent asymptomatic hypertension but had occasional recheck examinations, during one of which (1944) she stated that she was "better than for many years." She died on July 3, 1949, from cardiac insufficiency which had progressed during the three months before death. Autopsy was not performed.

This is an example of a combined bromide and cyanate delirium. The subsequent course revealed that for eight years she remained free from any symptoms referable to cardiovascular disease. Thiocyanate had been given, as is frequently the case, for symptoms of anxiety wrongly attributed to hypertension.

COMMENT

Several difficulties that hinder the prompt recognition of thiocyanate psychosis deserve emphasis. Clinically the toxic delirium varies from mildly stuporous, confusional states to delusional, hallucinatory, or maniacal outbursts. The psychosis resembles and indeed, as indicated in Case 8, may coexist with bromide psychosis. The onset of mild confusion may complicate the problem, since the patient may then unwittingly further overdose himself. The fact that the psychosis is increasing in severity and one knows the drug has been discontinued does not invalidate the diagnosis, as was amply demonstrated in two of our cases. In Case 2 the psychosis was getting worse a week after therapy had been terminated; and in (Case 5, three days after cessation. Focal neurological signs should not allow the diagnosis to be missed. At least four of our patients were considered by their physicians to be suffering from cerebral vascular disorders or "hypertensive encephalopathy." We wish to stress that any patient with a delirium of obscure origin, particularly a patient said to be or found to be hypertensive, may be suffering from thiocyanate intoxication. Despite denial of drug intake by relatives or ignorance of its prior prescription by the attending physician, serum analysis should be made. Neglect of this often results in failure to recognize thiocyanate poisoning.

There would seem to be no justification for using this remedy of disputed value in a casual manner. When the drug is used in sporadic, uncontrolled fashion, thiocyanate psychoses may be expected more frequently. Such cases will be rare in carefully studied series, as published morbidity and mortality figures indicate. In view of its dangers the drug, if used at all, should be given only to patients carefully followed with regard to optimum dose, serum levels, and toxic reactions.

SUMMARY

A series of eight cases of thiocyanate psychosis presenting problems in the diagnosis of confusional psychosis are reported. Two died. In no instance was serum cyanate measurement used to guide the drug administration. The incidence of thiocyanate psychosis is doubtless higher than generally believed because of ignorance of the condition and its misinterpretation as hypertensive cerebrovascular disease. Thiocyanate is a dangerous drug unless patients are closely observed for toxic manifestations and serum levels are taken frequently.

Toronto General Hospital, College St. (Dr. Spaulding).

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MERCAPTOMERIN SENSITIVITY

REPORT OF A CASE

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Effective employment of mercurial diuretics in the management of cardiac decompensation is now well recognized. With the widespread use of these drugs, reactions have been noted ranging from local irritation at the site of injection to cardiac arrest caused by mercurial poisoning. The fatalities reported in the literature have all followed intravenous injection; other reactions including severe shock have been observed following all other methods of administration. Hypersensitivity states, including asthma, urticaria, fever, and mild shock, have occurred frequently. After intramuscular injection, the incidence of toxicity is considerably lessened; however, local pain and irritation are common and objectionable. Efforts have therefore been directed toward developing a mercurial diuretic which would be less toxic, locally less irritating, and more easily administered than the diuretics now in use.

In the attempt to reduce mercurial toxicity, BAL (2, 3-dimercaptopropanol) was combined with a mercurial group. While this successfully reduced the toxicity, it also eliminated the diuretic effect.[1] The next step consisted in combining a single mercapto group with the organic mercurial. This salt, called mercaptomerin, was demonstrated to be 160 times less toxic than meralluride (mercuhydrin®) on a cat's heart.[2] It has been introduced for subcutaneous use under the trade name of thiomerin.®[3]

The following case is reported to warn other clinicians of the possibility of reactions of the sensitive or allergic type, reports of which have been conspicuously absent in the literature.

REPORT OF CASE

C. K., a white woman aged 49, had a long history of rheumatic heart disease and had had choking sensations and shortness of breath of one day's duration. The onset of symptoms had occurred at night while the patient was in bed; she had obtained some relief by sitting up. The symptoms persisted, and she was admitted to Gouverneur Hospital on Jan. 28, 1950.

She had previously been hospitalized in 1946, 1947, 1948, and 1949, for rheumatic heart disease with decompensation. The patient had been seen frequently at the Cardiac Clinic, and was taking a maintenance dose of digitalis daily; this was discontinued one month prior to the present admission. Physical examination revealed a thin, anxious woman, who was dyspneic and orthopneic. Positive findings were blood pressure, 150/100; heart rate, 96, with regular sinus rhythm and an occasional extrasystole; enlarged heart with presystolic and systolic murmurs heard at the apex; accentuated second pulmonic sound; bilateral moist rales heard at both lung bases; and minimal bilateral pitting edema of the lower extremities. A diagnosis of rheumatic disease with mitral stenosis and insufficiency, and cardiac decompensation, was made. The patient was treated with meralluride, salt-free diet, and bed rest.

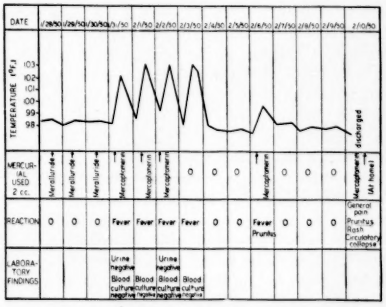
On Jan. 30, 1950, she was digitalized again with digoxin. The following day 2 cc. of mercaptomerin was given instead of meralluride. That evening she began to run a spiking temperature. Examination of the respiratory tract, legs, and urine failed to elicit the cause of the temperature elevation. Urine and blood cultures were all noncontributory. The fever continued until Feb. 4, 1950, when it subsided without therapy. The dates of the temperature spikes coincided with mercaptomerin injections. The day after the daily injections were discontinued the fever subsided (Chart).

On Feb. 6 she was again given 2 cc. of mercaptomerin. One-half hour after the injection she complained of generalized pruritus; this subsided after she was given tripelennamine (pyribenzamine®) hydrochloride. She refused any further injections. On Feb. 10 the patient was discharged for home care. That afternoon the visiting nurse gave her an injection of 2 cc. of mercaptomerin at home. Shortly after the injection the patient complained of severe abdominal cramps and generalized pruritus. Tripelennamine was again prescribed, but the symptoms persisted. A local physician was called in and found the patient in a state of circulatory collapse. She was promptly readmitted to Gouverneur Hospital.

The patient's abdomen and chest were covered with a generalized erythematous rash. Blood pressure was 60/30; pulse rate, 60. Other findings were essentially as before. Fluids, sedation, and antihistamine drugs were administered. All the symptoms subsided by the following day, and the patient was discharged two days later.

COMMENT

We consider this to have been an allergic reaction, accompanied with fever, chills, sweating, and circulatory collapse. It is believed that the patient became sensitized to mercaptomerin, and during the last hospital admission



Clinical course after administration of diuretics.

manifested this sensitivity. The problem was to definitely establish this premise.

The methods of skin testing for hypersensitivity to drugs were reviewed. The outstanding reports of positive reactions to skin tests with drugs are presented below.

Sherman and Cooke demonstrated a positive passive transfer to sulfadiazine in a patient with a severe clinical reaction to this drug. The presence of a skin-sensitizing antibody to sulfadiazine was demonstrated by means of a patch test with 10% sodium sulfadiazine. After 90 minutes a definite wheal with erythema was noted at the site of the patch. Passive transfer showed a marked reaction to 1% sodium sulfadiazine with a wheal 1.5 cm. in diameter. Controls were negative.[4]

From the combined medical services under the direction of Drs. Theodore Sanders and Arthur Schifrin, Gouverneur Hospital. Resident in medicine, Gouverneur Hospital (Dr. Weissman). Visiting physician, and chief of the Department of Allergy, Gouverneur Hospital (Dr. Gelfand).

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3. The Campbell Pharmaceutical Co., 79 Madison Ave., New York 16.

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Whittemore and de Gara demonstrated a positive scratch test to sulfadiazine and sulfathiazol.[5]

Gottlieb showed a positive patch-scratch test to meralluride in a patient who was clinically sensitive to the drug and who reacted to it with urticaria.[6]

Goodman and Levy performed scratch, patch, and intradermal tests using sulfanilamide both powdered and in solution. In one patient all three tests were negative, whereas in another patient the scratch test was positive, although the intradermal and patch tests were negative.[7]

Wedum successfully sensitized animals to sulfathiazole, sulfanilamide, and sulfapyridine azoproteins made by conjugation with egg whites, beef serum, and human serum. He was able to demonstrate anaphylaxis, positive intradermal tests, and precipitins in these animals, using the homologous chemoprotein.[8]

Generally speaking, however, skin tests with drugs have been uniformly negative in the positive wheal reaction.[9] The delayed inflammatory reaction which usually follows is nondiagnostic, for it may be nonspecific in type and bear no relation to the clinical sensitivity.

The crux of the problem lies in proving the allergic aspects of sensitivity to the drug if the intradermal or dermal skin tests are either negative or show only the inflammatory reaction. A clue to the answer has been offered by Leftwich.[10] The rationale of eliciting a positive intradermal test to the serum conjugate in those who are clinically hypersensitive to a drug is based primarily on the original work of Schönholzer,[11] and Davis,[12] who proved that the sulfonamides could combine with the plasma proteins. Rich [13] proposed the hypothesis that the sulfonamides, when attached to the plasma proteins, probably act as haptens, thus sensitizing the body specifically. Leftwich worked with patients known to be hypersensitive to the sulfonamide drugs. He devised the method of skin testing with serum obtained from patients who were receiving sulfonamide therapeutically and who had a drug level of from 2 to 25 mg. per 100 cc. The sensitizing antigen is thus a sulfonamide plasma protein combination which occurs in vivo in the circulating blood of these patients during sulfonamide therapy. Schönholzer demonstrated the binding of the azo dye of "prontosil" to serum albumin by means of electrophoretic techniques. Leftwich showed negative skin test reactions with solutions of various sulfonamide drugs in patients who were clinically hypersensitive to them. However, as previously stated, he was able to demonstrate that blood serums taken from persons undergoing sulfonamide therapy who had reached a high drug-serum level, when injected intradermally resulted in a positive wheal reaction.

Sherman [14] and his associates, as well as Fink, Burton, and Wheeler [15] were unable to corroborate the results obtained by Leftwich. However, Gelfand,[16] in a recent report, showed a positive immediate wheal reaction to such a test with serum-conjugate taken from a patient who manifested a clinical sensitivity to meralluride similar to the sensitivity to mercaptomerin reported in this paper. Brown and Goodgold [17] demonstrated an immediate skin reaction to serum containing aureomycin.

Thus, we have a method of demonstrating drug hypersensitivity by means of the serum-conjugate method in cases where the patient is clinically hypersensitive and the test with the drug-antigen is either too irritating and produces nonspecific reactions or results in a flat negative skin test reaction.

The following method was employed in demonstrating the allergic nature of the sensitivity to mercaptomerin in the patient discussed here. At first an ampule solution of mercaptomerin and meralluride was used. An injection of 0.05 cc. of both drugs was given intradermally in the forearm with but slight response of indeterminate nature. Serum from the patient during the active phase of mercaptomerin sensitivity, i. e., within a short time after the date of the original reaction, was then prepared. Serum was also taken from a patient not receiving mercurials, and from a patient receiving meralluride; 0.05 cc. of each of these serums was injected intradermally to form a small wheal. The mercaptomerin serum-conjugate produced a marked positive reaction in the form of a positive wheal within 20 minutes. The other two serums produced negative reactions. Ten months after the cessation of mercaptomerin therapy the patient was again tested. At this time, theoretically, the patient's serum would be in an antigen-free state; i. e., the mercaptomerin serum-conjugate would no longer be active. As was expected, the patient did not react to her own serum at this time. As an additional check, the patient was skin tested with serum from a nonsensitive patient receiving mercaptomerin at the time the tests were done. This serum contained the active serum-conjugate of mercaptomerin. When injected intradermally, a positive wheal reaction was produced. Normal human serum produced a negative reaction.

This then is a case of hypersensitivity to mercaptomerin that is manifested clinically by fever, abdominal cramps, pruritus, an erythematous rash, and circulatory collapse, and demonstrated rather conclusively by means of the intradermal wheal reaction.

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SUMMARY

A case of congestive failure was described in which hypersensitivity to mercaptomerin (thiomerin®) is demonstrated. The patient was able to tolerate meralluride.

Intradermal skin tests with mercaptomerin were negative. A marked positive immediate wheal reaction was elicited in the mercaptomerin-sensitive patient with post-treated mercaptomerin serum taken from her in the active antigen phase, immediately after the clinical reaction to the drug. However, the reaction was negative when tested with serum in the negative phase 10 months after the occurrence of the untoward reaction. A positive wheal reaction was elicited in the patient using active mercaptomerin serum-conjugate of a nonsensitive patient. Normal human serum, used as a control, produced negative reactions.

20 Park Ave.

TICK PARALYSIS

REPORT OF A CASE

Beulah M. Kittrell, M.D., Maryville, Tenn.

The bite of certain female wood and dog ticks results in a generalized flaccid paralysis, which terminates fatally unless the tick is found and removed. Although this syndrome has been recognized for almost 50 years, a cursory review of the literature indicates that this fact is not generally known. Tick infestation is widespread, but the few case reports come from limited areas, many states never having reported its occurrence.

The following case is presented to call attention to the tick as the possible cause of unexplained ataxia and paralysis and to the fact that its removal results in rapid and complete recovery from an otherwise fatal illness. There have been no other cases reported from Tennessee.

REPORT OF CASE

A healthy 4-year-old girl awoke in the morning with incoordination of both upper and lower extremities. She refused to get out of bed or to feed herself. She did not complain but stated simply that her feet felt "soft and flat." Her movements were too uncoordinated for her to feed herself, but she ate heartily when fed by her mother. On attempting to stand, she swayed from side to side, then crumpled on the floor. With support, she staggered across the room, but apparently had complete loss of muscle sense or direction. There was no history of antecedent illness. The day before, her movements had appeared awkward, and she had said once that her feet "felt queer." This was thought to be because of the cowboy boots she had been wearing and was of no significance except in retrospect. Family and past history were noncontributory.

The findings of the physical examination made four hours after the onset of the illness were negative except for neurological signs. The child was sitting up in bed and appeared apprehensive and uneasy. Her eyes had a glassy stare, and there was some tremor of her hands. There was questionable thickness in her voice. She was fully oriented but was cross and noncooperative.

Sensation was normal. There was bilateral absence of biceps and triceps reflexes in the upper extremities. The degree of incoordination was difficult to estimate, because she refused finger-to-nose and other tests. All superficial abdominal reflexes were absent. There was bilateral absence of knee jerks. She could raise her legs normally and flex both knee and hip joints. Plantar flexion and extension were good. On attempting to stand or walk she repeated the same ataxic pattern exhibited on arising.

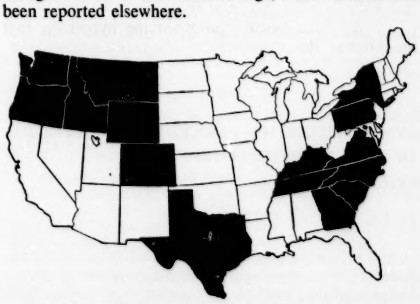
A consultant was called, and while hospitalization and spinal studies were being discussed, a moderately engorged tick was accidentally felt in the left occipital region. It was removed intact. Two hours later, the child walked across the room unsupported and of her own volition. Her gait was unsteady, but she did not fall. Before, it had required a great deal of coaxing to induce her to attempt to get out of bed or walk. The following morning her gait was normal and all reflexes were present. She has been well since.

The tick was identified as Dermacentor variabiles Say, or the common dog tick, which is prevalent throughout this area. It had been removed alive and placed in a glass jar. The following morning there were three stacks of eggs in the jar. It was felt that it was possible to make a diagnosis of beginning tick paralysis because there were present sufficient criteria: (1) severe ataxia with loss of reflexes, (2) discovery and removal of a female tick, and (3) rapid and complete recovery.

COMMENT

Although ticks are widely distributed throughout the United States, only fourteen states and the District of Columbia have reported tick paralysis. These cases have been concentrated in certain areas of the extreme Northwest and in the South, to the Atlantic seaboard.

The files of the Rocky Mountain Laboratory of the United States Public Health Service (Helena, Mont.) show an average, since 1903, of 2.7 cases per year in the states of Montana, Oregon, Idaho, Washington, Wyoming, and Colorado. The paralysis resulted from the bite of the Rocky Mountain wood tick (Dermacentor andersoni Stiles), and up until 1938 the disease was thought limited to this insect's range, since no cases had been reported elsewhere.



States from which tick paralysis has been reported (shaded areas).

The first recognized case east of the Mississippi River occurred in South Carolina, in 1938.[1] Since then, 16 other cases have been reported,[2] giving an average of 1.4 per year. All have been south of the Mason-Dixon Line except for one in Pennsylvania [3] and one in New

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York.[4] The tick, when identified, has been D. variabiles Say, prevalent throughout the central and eastern United States.

The few cases reported are from only small sections of the vast areas inhabited by the two types of ticks. With their almost universal distribution it appears the disease would be more widespread.

The paralysis is believed to be due to a specific neurotoxin produced by a limited number of pregnant female ticks. Symptoms are mild and transient if the tick is found and removed early. If it is not found until bulbar signs are present, death results from respiratory failure. The only treatment is for the physician to think of tick paralysis whenever signs and symptoms of unexplained paralysis are present and remove the tick.

Jellison and Gregson,[5] in a review of the cases occurring in the western United States and British Columbia,[6] state that, even in areas where there is widespread knowledge of the disease, deaths continue to occur. They cite two instances in which ticks were found and removed by morticians.

CONCLUSION

Although tick infestation is known to be widespread, few cases of tick paralysis have been reported. Since most textbooks mention only that such a syndrome is known to occur, and since so few cases have been reported in the current literature, it seems likely that many cases may be overlooked.

304 Blount National Bank.

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SYMPATHECTOMY PRECEDING LIGATION OF THE CAROTID ARTERY

REPORT OF A CASE

Paul G. Flothow, M.D., Seattle

In 1935, after ligation of the subclavian artery, followed by immediate sympathectomy without ill effects, I suggested that whenever it became necessary to ligate a major blood vessel anywhere in the body that it would be wise to precede this ligation by sympathectomy, or if the vessel were ligated inadvertently, an immediate sympathectomy at the proper level would insure against a vascular catastrophe.

I offer the following case report to illustrate the application of this principle in ligation of carotid arteries.

REPORT OF CASE

History.—The patient presented herself on June 10, 1949, with the history of a malignant tumor removed from the right side of her neck in December, 1947, with immediate left-sided hemiplegia, the surgeon having been forced to ligate the common carotid artery. The paralysis had improved somewhat, but she still had a spastic left hemiparesis. She was informed that the tumor was malignant but not cancerous. The surgeon wisely declined to remove the tumor on the other side which was of approximately the same size.

From the Seattle Neurological Institute.

The patient complained of pain in her neck and in the left side of her head, and, since the tumor mass was enlarging, she was very much worried for fear it was cancerous. This patient was 40 years old, and in view of the fact that ligation of the carotid artery two years before had resulted in hemiplegia, it was fair to assume that a ligation of the other carotid would produce hemiplegia on the other side.

While I felt quite confident that cervicothoracic sympathectomy would normally prevent the development of hemiplegia, in this particular case, the other carotid having been ligated, I feared that this factor might prevent the establishment of the rapid collateral circulation necessary to prevent hemiplegia unless vasospasm were the important factor in its development.

The various possibilities were discussed with her, and at her insistence surgery was very reluctantly undertaken.

Operation.—Surgery was performed on Sept. 9, 1949. Through a supraclavicular incision a cervicothoracic sympathectomy was first done, with removal of the inferior cervical and first and second thoracic ganglions and the trunk. This wound was then closed and another incision made for removal of the carotid body tumor. The tumor mass was approximately 4 cm. in diameter, and it was impossible to remove the tumor mass without ligation of the carotid vessels above and below the tumor. This procedure was carried out, ligating two vessels above and one below, all of which were undoubtedly the common carotid and the internal and external carotid arteries. The patient made an uneventful recovery without even a trace of hemiplegia as the result of the ligation of the carotid arteries, in spite of the fact that the opposite carotid had been ligated previously.

It is a well-recognized fact that, in spite of diligent preliminary digital or mechanical compression of the carotid arteries, not infrequently, when the carotid is finally ligated, hemiplegia does occur. This phenomenon can be explained by the fact that ligation of the vessel produces an immediate and marked vasospasm of the entire vascular tree which is not produced by the usual preliminary compression. This vasospasm is, of course, avoided when preliminary sympathectomy is done, and it is my opinion that this is the most important factor involved in the development of the hemiplegia.

COMMENT

My associate, Dr. Hunter J. MacKay, has had occasion four times during his naval experience and on three occasions since then to operate for axillary aneurysms, and on each occasion he has preceded the operation by cervicothoracic sympathectomy. There has in no instance been any vascular insufficiency resulting from ligation of the axillary artery.

CONCLUSIONS

The above cases, reported with their results, make it a fair assumption that, in any case in which it becomes necessary to ligate a major blood vessel, this ligation can be immediately preceded or immediately followed by a suitable sympathectomy with a great deal of assurance that there will be no ill effects as a result of the ligation.

It is suggested that in all cases in which it becomes necessary to ligate the carotid artery, either as an elective or as a necessary procedure, that this ligation should be preceded by cervicothoracic sympathectomy, which, it is suggested, is a much more adequate insurance against the development of hemiplegia than any method of repeated compression or gradual compression of the carotid artery before ligation.

1317 Marion St.

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USE OF HUMAN SERUM ALBUMIN IN CEREBRAL EDEMA FOLLOWING CARDIAC ARREST

REPORT OF A CASE

Frank Cole, M.D., Lincoln, Neb.

Human serum albumin was first used to combat post-anesthetic encephalopathy by Seldon and associates.[1] However, in the two cases they described, there was no cardiac arrest. In the case presented here, human serum albumin was administered in a post-asystolic syndrome.

REPORT OF CASE

At 7:40 a. m. on June 21, 1950, a tetracaine-procaine spinal anesthetic was administered to a 21-year-old white man, by his surgeon, for right inguinal hernioplasty. The injection was made at the second lumbar interspace after administration of 50 mg. of ephedrine. Six minutes later the level of anesthesia was at the umbilicus; the head was then raised. During the next 30 minutes the blood pressure fell progressively, but not too precipitantly. Carbon dioxide and oxygen were given for nausea and perhaps shallow respirations. By 8:20 a. m. the blood pressure was 100/60. Two minutes later the patient became both apneic and pulseless. The head was lowered, and after several minutes oxygen was administered under pressure.

The patient was cyanotic; his pupils were widely dilated. His color improved after one minute, but, although 1 cc. of epinephrine hydrochloride and 1 cc. of pentylenetetrazole (metrazol®) were administered intravenously, the heart remained flaccid. A midline subensiform incision was made, and the heart was massaged for three minutes. Finally, 1 cc. of epinephrine was injected into the heart. Two minutes later the first feeble heart beat was noted. The contractions gradually became stronger and regular in rhythm and volume. At 8:35 a. m. the patient drew his first voluntary breath since the appearance of cardiac arrest. Within five minutes respiration was deep and apparently normal, and the operation was resumed.

At 9:20 a. m. both incisions were closed. The patient was placed on a cart, where he immediately became spastic. The spasticity became severer; the breathing was stertorous. Pink, frothy pulmonary secretions appeared, which were aspirated. Generalized spasm appeared, then rigidity and convulsions. The convulsions continued until noon, being stopped three times by intravenous administration of thiopental (pentothal®) sodium. The patient continued to have a considerable amount of mucus.

I first saw the patient at 12 noon, while he was still unconscious and in convulsions. The respiratory rate was 40, the pulse rate 132, and the blood pressure good. The color was fairly good while he was receiving oxygen; without it, he was cyanotic. He was given 5 cc. of thiopental sodium and 50 cc. of 50% glucose intravenously. The convulsions stopped, and the rigidity gradually declined. At 12:30 p. m. his rectal temperature was 105.2 F and blood pressure 140/85.

On arriving, I had substituted a Guedel pharyngeal airway for the mouth gag that was being used. The BLB (Boothby-Lovelace-Bulbulian) mask was now removed, and an ordinary face mask connected to an anesthesia machine was applied. Oxygen under pressure of 4 mm. Hg was administered to combat the pulmonary edema; the inhaling breathing tube was surrounded by cracked ice. The increased pressure promptly cleared the pulmonary edema. Glucose was again given intravenously at 1 p. m. At this time the temperature was 104 F, pulse rate 112, respiration rate 36, and blood pressure 138/85. It had been apparent earlier that cerebral edema was present, and at 1:30 p. m. 100 cc. of human serum albumin (containing 25 gm. of albumin) was administered intravenously.[2] At 2 p. m. the patient opened his eyes and appeared to swallow. The temperature fell to 102 F. A half-hour later he moved for the first time, turning over onto his abdomen. At 3 p. m. 100 cc. of human serum albumin was again given intravenously. He was returned to his room at 4 p. m. At 6 p. m. he was quiet, tolerated the pharyngeal airway, and had eyelash, corneal, and pupillary light reflexes but did not appear to see. He appeared to respond to sound occasionally. At 8 p. m. the respiratory rate had fallen to 24. At 10 p. m. he seemed to see a friend who was in the room and extended a hand to him. He rose to his knees and voided in bed. He no longer tolerated the airway and appeared to stare constantly.

At 6 a. m. the next day he phonated loudly but did not speak. He grimaced frequently and resisted being moved. A dose of 100 cc. of human serum albumin was injected intravenously. Now good color could be maintained without oxygen. On the third day he was able to hear and see and to recognize people. He said he ached "all over," pointing to the regions just behind, or lateral to, the eyeballs. He spoke intelligently and could eat and drink easily. At 6 p. m. that day he stood and walked with assistance. Later that evening he spoke well and read small print with understanding. He wrote his name with great effort and had difficulty with the spelling. He was disoriented to time and space. He was unable to remember my name after being repeatedly prompted. Neurological findings were negative, except for the finger-nose test. That night he remained awake and was particularly active and disoriented. On the following night he was again active. He suspected his nurse and men he thought he saw on a roof of wanting to kill him. He was given 1½ grains (0.10 gm.) of secobarbital (seconal®) sodium by mouth, with good results. Hallucinations continued the next day, but only intermittently. He was now physically well, and the urinary output was adequate.

At 8 p. m. on June 25 he was irrational again and spoke of traveling from Mars and of an interplanetary war. He began to improve again on June 27. His conversation was moderately animated and reasonably intelligent. On the evening of July 1 he recognized me for the first time and called me by name. He walked only a trifle unsteadily but was still somewhat confused. On July 15 he was still continuing to improve. He conversed well and spoke of his studies, which he was eager to resume. The only change apparent to a friend who had known him well before his operation was that he was somewhat less vivacious than before. His memory for events immediately preceding the operation was imperfect but improving. A few days before he had thought he had done twice what he had really done only once and had thought that two persons had visited him when only one had been there; this phenomenon soon disappeared, and it was felt that his recovery was complete.

COMMENT

In suggesting the use of human serum albumin immediately after a period of cerebral anoxia, Seldon and associates [1] offered the following hypothesis:

> Permanent damage to the brain as a result of acute cerebral anoxia not only is a function of the duration of the anoxic episode, but also, in the case of sublethal periods of anoxia, must be conditioned by the duration and severity of a period of post-anoxic cerebral edema. It is suggested that a considerable portion of the permanent cerebral damage reported in these unfortunate cases may be the result not of the initial insult, but rather of a period of untreated cerebral edema subsequent to the initial insult.

The pathology would appear to be the same, whether it followed anesthesia or asystole: cerebral (and pulmonary) edema following anoxia. Administering human serum albumin in the post-asystolic syndrome proved to be equally beneficial here.

SUMMARY AND CONCLUSIONS

Cardiac arrest occurred during spinal anesthesia in a 21-year-old man undergoing hernioplasty. Cardiac massage was started within five minutes; asystole was present

Chief, Department of Anesthesiology, Veterans Administration Hospital.

Reviewed in the Veterans Administration and published with the approval of the chief medical director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. Seldon, T. H.; Faulconer, A.; Courtin, R. F., and Pino, D. M.: Postanesthetic Encephalopathy: The Postulation of Cerebral Edema as a Basis for Rational Treatment, Proc. Staff Meet., Mayo Clin. 24:370 (July 6) 1949.

2. The human serum albumin was supplied without cost by the American National Red Cross, Omaha Regional Blood Center.

for 11 minutes. Cerebral (and pulmonary) edema followed, with coma, convulsions, cyanosis, hyperpyrexia, tachycardia, tachypnea, and insensitivity to light. Human serum albumin was administered intravenously three times. Recovery was complete within three weeks.

A new weapon has been added to the physician's armamentarium in the treatment of cardiac arrest and its sequelae. During asystole, artificial respiration and artificial circulation by cardiac massage are mandatory and efficacious. After a period of anoxia, cerebral edema often appears, for which intravenous human serum albumin seems to be an agent of choice.

Veterans Administration Hospital, 74th and J St.

SPECIAL ARTICLE

This special article was prepared by Dr. Henry H. Kessler after his visit to Yugoslavia as an expert consultant to make a survey for the Technical Assistance Administration of the United Nations. The report of the survey has been submitted to the United Nations as a 150-page document. A brief summary is included in THE JOURNAL *for those physicians who have expressed an interest in foreign medical education.*—Ed.

MEDICINE IN YUGOSLAVIA

Henry H. Kessler, M.D., Newark, N. J.

One of the brightest chapters in the history of medicine is the contribution made by the medical profession in Yugoslavia. Faced by shortages of personnel, supplies, and beds, and against superhuman obstacles, they have shown a devotion to duty, a technical competence, and a professional loyalty that symbolize the epic character of the ideal physician.

As a result of the war, one of the primary problems facing the country and the medical profession was the great shortage of doctors—1,500 physicians were lost in the war, leaving only 6,000 to carry the burden of medical care for 16 million people. Half of the remaining doctors are 50 years of age or older. Many of them divided their time between military duties and civilian care. To the load they were already bearing was added the burden of illness and disability that resulted from the war.

Furthermore, the rapid industrialization program was producing a toll of accidental injuries that was competing with the automobile casualty rate in the United States. In the face of all these responsibilities, and in the presence of the extraordinary political, economic and social problems of the country, the record of medical activities is remarkable.

Meeting the medical needs of the nation at the close of the war became a challenging responsibility for the authorities. Because of the close association of the Yugoslavs with the Russians, it was suggested that the former adopt the Russian "Feldscher" system, a throwback to Czarist times, in which certain individuals without formal medical training were given major medical responsibilities. In rural areas particularly, the "Feldscher," whose training and experience were less than those of the corpsmen in our armed forces, and more nearly approached those of a first-aid man or orderly, frequently assumed prerogatives that included minor surgery and, occasionally, major surgery.

The medical profession of Yugoslavia is to be congratulated for turning down this suggestion. They preferred to assume additional burdens of work and responsibility in order to maintain their professional standards. Thus one finds men like Professor Jecic of the University of Belgrade Medical School, occupying not only the chair of neuropsychiatry but also the deanship of the medical school, presidency of the Serbian Medical Society, presidency of the Yugoslav Red Cross, and many additional positions of responsibility. Professor Nedo Zec in Sarajevo, formerly Minister of Health for Bosnia-Hercegovina, is dean of the medical school, professor of neuropsychiatry, director of the mental hospital and professor of medical jurisprudence of the law school.

MEDICAL EDUCATION

The great need for doctors forced the development of an ambitious program of medical education. While there had been an old established medical school in Zagreb and a recently established medical faculty in Belgrade, there had been none in the other republics except for a short two-year course in Ljubljana, in Slovenia. Therefore, the latter was extended to a full six-year course, while new medical schools were established in Sarajevo for the republic of Bosnia, and in Skoplje for the republic of Macedonia.

These schools now have a combined enrollment of 8,000 students. Many of these students receive scholarships or subsidies from the state, and, frequently, military service is deferred until the completion of their studies. In the medical school at Belgrade, 4,500 students are enrolled, and I had the unique distinction of lecturing before 1,300 of them in the anatomy institute of the university.

The course of study is six years, followed by one year of internship and two years of service in the rural areas. Despite this requirement, it is difficult to get the doctors to practice in the country. As in capitalistic nations, the doctors prefer to remain in the big cities.

Despite this elaborate program of medical education, it will take 10 years to meet the goal of 16,000 doctors, since no more than 1,000 doctors can be expected to graduate each year. This has forced the authorities to engage foreign doctors under contract. Banja Luka, a town of 40,000 with a 700-bed hospital, has employed a gynecologist from Carlsbad who is quite happy in his position and well qualified to give service.

Zenica in Bosnia, about 100 km. from Sarajevo, is a town of 20,000 just emerging from the complete devastation of the Partisan War. It has a small 90-bed hospital catering to the needs of the local population. The town is being projected as the future Pittsburgh of Yugoslavia and has been affectionately referred to as the Yugoslav Ruhr because of its coal and iron resources, now being developed. A small blast furnace, forge, and rolling mills are already transforming the primitive country into the site of heavy industry. The hazardous work of this industry requires constant medical control, and full-time doctors are employed at the pits and mines. In addition

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to preemployment examinations, a full program of medical care is carried out at home, in the hospital, and on an outpatient basis. In Zenica, a former Austrian physician from Graz is now employed by the Yugoslavs. At the close of the war, the physician was liberated as a prisoner of war but returned to Graz; in a few months he applied for a position as a contract physician and was sent to Zenica. His salary is 10,000 dinar a month, 4,000 dinar a month greater than the salary of the local Yugoslav physicians. When the latter were asked if they resented this large difference in pay, they replied that they were quite happy with the arrangement. If their former enemy was willing to return and help them rebuild the country, he was entitled to the maximum compensation.

MEDICAL ECONOMICS

It is difficult to translate foreign currency into dollars, since the purchasing power of the currency and the availability of goods influence the value of the currency. Officially, the dinar is worth two cents, or 50 dinar to the American dollar. The average pay of a doctor is 6,000 dinar, or $120, per month, hardly enough to take care of his needs. Roughly, it takes 12,000 to 15,000 dinar for a physician, his wife, and two children to live in fair circumstances. To meet expenses, the doctor's wife is frequently employed as a doctor, pharmacist, interpreter, or in whatever capacity her special talents justify. The combined salaries of the two help meet the needs of daily living.

The doctor is employed on a full-time salary basis and has no other income unless he takes on several jobs. For example, the limb-fitting surgeon at the chief artificial limb factory in Belgrade spends half a day at this factory and the other half at one of the local hospitals.

University professors may carry on a private practice. Generally, the fees are about 150 dinar a visit, and if the doctor devotes enough time to his practice he can make a comfortable living. However, he is frequently unable to devote himself to his practice since his duties at the medical school and hospital take up much of his time. His position as a professor, however, affords him an opportunity to earn additional revenue by giving special lectures, writing articles, editing books, and performing other extra-curricular professional assignments. Furthermore, his academic position permits him better housing. For example, he is permitted to have a separate room in his home for carrying out his academic assignments such as the preparation of lectures. He is also permitted to have an office and examining room for his private patients. Housing being at a great premium, this is an item of considerable importance.

About 10% of the doctors devote themselves exclusively to private practice; some derive substantial incomes, but the results are variable. Although surgeons may charge for the visits and examinations, they cannot make any charges for surgical procedures performed in state or public hospitals. All incomes, of course, are subject to government income tax.

The rate of wages and salaries for physicians must be evaluated in terms of compensation to workers and other professional groups.

The average worker receives about 5,000 dinar a month, but can increase his income by overtime work, or by work in especially hazardous occupations. The workers in the famous Litostroj steel plant, a miniature United States Steel Corporation, average about 8,000 dinar a month.

On the other hand, journalists, artists, writers, actors and musicians receive 10,000 to 12,000 dinar a month. Among the highest paid workers are coal miners, who receive up to 15,000 dinar a month.

A teacher in a school for deaf or crippled children receives 3,500 dinar a month. A student scholarship provides a subsidy of 2,500 dinar a month. If the student is married to another student, the combined income of 5,000 dinar provides them with just enough income for bare existence. This hardship can be understood from the fact that food requires about 85% of the average person's income. Clothing, which is frequently rationed at regular prices, can be bought on the free market at highly inflated prices. For example, a pair of shoes on the free market costs 4,000, a shirt, 3,000 and a suite of bedroom furniture, 110,000 dinar.

MAJOR HEALTH PROBLEMS

The Balkans are the most complex countries in the world. Centuries of invasions and counter-invasions, epidemics and primitive living have left a legacy of disease and invalidism. Conflicting religious beliefs, political allegiances, and ethnic differences served only to complicate the picture. World War II, in which 1,700,000 persons were killed, performed the great miracle of unifying the various elements, however.

The major health problems are those of infectious diseases. Typhus and malaria, rampant for centuries, have just recently yielded to the magic touch of dichlorodiphenyltrichloroethane (DDT). Endemic syphilis involves 10% of the population of Bosnia. Of all the diseases, tuberculosis is the great maimer and killer—the incidence runs from 1.1% of registered cases among the population of Ljubljana to 2% in special sections of the country studied by Neubauer. If Neubauer's ratio were applied to the total population of 16 million, it would reveal a tuberculosis incidence of 320,000 cases.

It has been estimated that 500,000 men, women and children, victims of war injuries, accidental injuries, disease and congenital defects, require rehabilitation services.

PUBLIC HEALTH ORGANIZATION

To meet these needs, Ministries of Health and Ministries of Social Affairs have been established in each of the six republics: Serbia, Croatia, Slovenia, Bosnia-Hercegovina, Macedonia, and Montenegro. At the federal level, the Federal Committee of Health coordinates the work of the ministries of health in the various republics. This department controls the sanitary services, all preventive and curative medical services including hospitals, sanatoria, polyclinics, dispensaries, mobile hospital units, and all the medical personnel including those concerned with medical education in all its aspects.

The Minister President of the Federal Committee of Health meets with the Ministers of Health of the various republics to review the health problems of the nation. The results of these conferences are translated into legislative recommendations which are then passed on to the President of Parliament and may be enacted into a law

(*Zagrund*) or, where emergency conditions require it, an *Urbar* or decree. These are sent to Marshal Tito for signature and go into effect immediately.

SERBIA

In southern Serbia there are 500,000 shepherds who live under the most primitive circumstances, constituting a health menace not only to themselves but to the entire nation as well. The need for public health education to raise the level of health interest and intelligence is concomitant with the need for improved living conditions.

There are 55,000 hospital beds in Yugoslavia, of which 17,500 are in Serbia. In Belgrade, in addition to the state or national hospital of 1,000 beds, there is a 2,000-bed military hospital. Several private hospitals have been taken over by the government. One of these, a 100-bed hospital, has been converted into a plastic surgery unit with a staff well trained by several British plastic surgeons. Another 60-bed hospital has been converted into a traumatologic or emergency hospital, while a third, a former private sanitarium, contains 50 beds for general medical and surgical purposes.

Medical services are carried out, for the most part, in polyclinics or outpatient dispensaries. Regional polyclinics are available to meet the needs of different sections of the city, with one very large central polyclinic (a former office building) providing the major diagnostic and treatment facilities.

The need for auxiliary medical personnel is as great as the need for doctors. From 1918 to 1941 only 1,253 men and women graduated from the middle medical technical school as nurses, nurses' aides, x-ray technicians, laboratory technicians, and physical therapists. In the past few years 56 new schools have been established, from which 1,750 were graduated in 1949.

Fifteen to 20 medical journals are published throughout Yugoslavia, with summaries of articles in French and English. The problem of supplying books to the medical students has been partially met by the publication of medical books in Serbian by the government printing office.

Among the outstanding medical personalities in Belgrade is Professor Dimitrije Jovcic, professor of orthopedic surgery and director of the surgical section of the children's clinic. Following the tradition of Ombredanne, his preceptor, he carries out the entire gamut of childhood surgery including general surgery, neurosurgery, orthopedic, and plastic surgery. Professor Voia Stojanic, in charge of general surgery, is another prominent surgeon who is well known for his contributions to his field and for his visits to various international meetings.

MACEDONIA

Suppressed by long years of political problems, Macedonia nevertheless exhibits a fierce will to wipe out its centuries-old cultural lag in a comparatively short time. Illiteracy is gradually being abolished. The problem of minority groups still exists, but the many Albanians, Shiptars, Turks, and Bulgars are permitted to use their own languages, schools and religions, and carry on their own cultural activities.

The determination of the Macedonians to catapult themselves into the 20th century is especially evident in Skoplje, where the swift Vardar separates the old town from the new. In the new town one observes the elimination of the old Turkish quarters, with their foci of disease, and the creation of large squares. Modern buildings appear anachronistic next to the remaining structures. Crossing the bridge into the old town is like returning to the middle ages, with its medieval atmosphere and its melange of diverse national and ethnic groups practicing the customs of 500 years ago. There are narrow muddy roads that pass for streets, and open bazaars. In contrast, one also sees long queues before the various shops selling rationed goods, women with veils which they furtively remove when crossing the bridge to the new town and just as furtively replace when returning to the old.

In Skoplje one finds some of the most rapid progress made under present conditions as compared to prewar and immediate postwar periods. A new medical school, accommodating 500 students, has been established. A university hospital of 800 beds caters to the needs of the city's population. An idea of the frenetic efforts toward the training of medical and ancillary personnel may be gained from the projects already completed and in progress. Five hundred men and women are being trained as nurses' aides and dental aides. One hundred midwives are attending a midwifery school. There is a school for dental mechanics.

There are four dispensaries in addition to the main polyclinic serving the needs of the local population. Each dispensary has facilities for dental care. In addition to the general dispensaries, there are 14 children's dispensaries and 13 children's mobile health units in Macedonia. The differences lie in the fact that the doctors at the dispensaries make house visits while the mobile health units provide outpatient services only.

Professor Jubasic is the outstanding surgeon, conducting a highly organized and skillful service of 200 beds at the university hospital.

BOSNIA AND HERCEGOVINA

Bosnia, which is now becoming the center of heavy industry, was the scene of the heaviest guerilla fighting in the war. It has a population of 2,700,000, of which one million are Moslems. Until 1918 it was ruled by Austria. Between 1918 and 1941 the economic lot of the average individual had changed little from the feudalism that had previously existed. Under such circumstances, there was never any money to buy soap or fresh linen. Centuries of living in filth had inured the people to any possible hazard of disease, about which they had little knowledge and less interest.

Sarajevo, the chief city of Bosnia, has a population of 140,000. It is noted as the place where the First World War had its beginning. The university clinic, a 1,500-bed hospital, is in Sarajevo. Professor Kovacic, head of the 320-bed surgical service, sparks the institution. The organization of the hospital, the technical skill displayed, and the quality of service and care would measure up to that found in the hospitals of any modern American community.

Nevertheless, the incidence of disease and invalidism is still very high. There are 15,000 cases of active pulmonary tuberculosis registered in Bosnia-Hercegovina.

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There are four to five thousand cases of bone tuberculosis, a higher incidence than in Macedonia, which has been attributed to differing customs of food preparation in the two republics.

An interesting feature of public health legislation has been the removal of all veils from Moslem women. This sanitary measure revealed that many men were masquerading as women.

Industrial accidents, accounting for 24% of the morbidity rate, is a serious public health problem. The incidence is second only to gastrointestinal disorders, with an incidence of 32%.

Zenica, a city 100 km. north of Sarajevo, is the scene of a rapidly developing heavy industry. The small 90-bed hospital is inadequate for the needs of the miners, the steel workers, and the community.

Banja Luka, in the northern section of Bosnia, was the scene of heavy fighting during the war. Fifty per cent of the city was destroyed and the ravages of war are still in evidence. Nevertheless, the city boasts a modern 700-bed hospital which serves not only the city but also 700,000 persons in the environs. Tuberculosis is the chief health problem, but endemic syphilis, rickets, malnutrition and rheumatism also abound.

DALMATIA

The favorable climatic conditions of the Dalmatian coast have made it a favorite area for rest homes, hotels for weary workers, and sanitoria for the treatment of bone and joint tuberculosis. Treatment in the sanitoria is conservative, with prolonged bedrest, streptomycin, extension, and plaster immobilization.

SLOVENIA

Slovenia, with a population of 1,400,000, is one of the most progressive of the republics and has a high standard of living. There are 6,500 hospital beds in Slovenia, of which 700 are devoted to pulmonary tuberculosis, and 200 to bone and joint tuberculosis. The medical school has been expanded since the war and now includes a five-year course which will soon be extended to six years. There is an 1,800-bed general hospital, in which 6,000 operations are performed annually. Gastrointestinal diseases are first in the morbidity statistics, with accidental injuries second. There is a high incidence of cancer.

CROATIA

Croatia, the second largest republic in Yugoslavia, has a population of over 3,500,000. Zagreb, its chief city, houses the oldest medical school in Yugoslavia, the Yugoslav Academy of Science, and the institute of public health. The institute, established many years ago with the help of funds from the Rockefeller Foundation, is under the direction of Dr. Stampar, one of his country's outstanding personalities. The institute of public health offers graduate and undergraduate courses in the fields of public health and industrial hygiene. The institute has many laboratories, a library, museum, and photographic record department. The institute, with its staff, is doing pioneering work in the increasingly vital field of public and industrial health and hygiene.

SUMMARY

This survey of health conditions and facilities in Yugoslavia reveals, first of all, the intense devotion of the medical profession to its responsibilities under the most difficult conditions. Secondly, one observes the great need of the Yugoslav physicians for contact with the scientific literature of the past decade. My meeting with Marshal Tito indicates that the profession will be given this opportunity through books, periodicals, films, and personal contacts. I recommended to the United Nations that 20 fellowships be established to permit Yugoslav medical personnel to visit Great Britain and the United States.

The philosopher Paulsen has said that the object of all help is to make help superfluous, and this ideal is being realized through international action.

53 Lincoln Park.

COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

This paper is one of a series requested by the Council on National Emergency Medical Service to inform the medical profession on problems pertaining to civil defense. It does not necessarily reflect, however, the opinions of the Council or of any other official body unless so stated in the article.

C. JOSEPH STETLER, *Secretary.*

MENTAL HEALTH AND CIVIL DEFENSE

Ozro T. Woods, M.D., Dallas, Texas

The national concept and philosophy of civil defense developed during World War II. It was the first time in warfare that the people at home were in danger from attack. We hurriedly set up a civilian defense organization. We developed a program while conducting the war. As the war progressed more successfully, the civil defense effort receded rapidly. It was practically abandoned by the end of the war. Civil defense contributed little to the winning of the war. Citizens in general did not then, and do not now, understand the relationship of a civil defense to the strength or survival of the nation, for this country has never experienced a crisis in which a long-sustained, supreme effort on the part of every citizen and each community was necessary for national survival. The comfortable family and community way of life has been relatively little disturbed by our last two wars.

CIVIL DEFENSE AND NATIONAL SURVIVAL

We can learn something from the experience of Germany in civil defense. Because collapse on the home front had been an important factor in their losing World War I, "... emphasis was placed on the fact that the emergency medical services had to be organized, equipped, and trained before World War II started. The completeness and excellence of the service were publicized for their effect on the morale of both civilians and military. The

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soldier at the front was assured that every protective measure was being taken for his family at home because of the experience gained in the first war when worry about home conditions had had a demoralizing effect on the troops." [1] The morale-building influence of an excellent civil defense plant protection was largely responsible for the low rate of absenteeism in the submarine shipyards in Hamburg that were bombed almost daily.[2]

This nation and its allies are now facing an enemy whose strength, resources, and methods of attack challenge us as a people to be strong, determined, and prepared on the home front as well as on the military front. There is a tendency to feel that the only danger is in the area of military combat. The activities of our enemy are known in other parts of the world. Our country faces these same dangers. I think they are best described by Paul G. Hoffman,[3] "To most of us, war's aim and end is victory on the field." To the Kremlin, military action is but the most visible and spectacular zone of combat in an unremitting war against a free world. Herein lies the strange, new, and often hidden danger—a danger we cannot fend off by arms alone. We must realize that, for the Kremlin, the military is only one of four fronts, each a battleground of implacable attack. These four fronts are the military, economic, political, and psychological. Lenin himself has defined them. He has declared that they comprise the four interlocking parts of a "most determined and ruthless war, a persistent struggle, bloody and bloodless, violent and peaceful, military and economic, educational and administrative, against the forces and traditions of the old society." Every level of our government, from federal to local, must facilitate and coordinate efforts to meet these dangers.

ROLE OF MENTAL HEALTH IN CIVIL DEFENSE

Within the people themselves are the ultimate resources for winning a peaceful world. There is a measurable limit to the supply of copper, tungsten, or other materials for making weapons to wage war. There is almost no limit to what a determined and resourceful people can do when they are strong and healthy, behave intelligently, and utilize their resources effectively. The organization of intelligent behavior is an important function of civil defense. The President has appointed Gordon Gray to head a board to coordinate the "strategic psychological warfare of ideas with the military and economic phases of our foreign policy." This long-needed board operates at a super-Cabinet level. There is no adequate machinery to coordinate the civilian activity in our domestic defense efforts in a similar manner. Some of these functions must be assumed by civil defense. There must be planning and education in order to develop an effective psychological defense through every organized, functioning group in society (governmental, professional, and social).

Into our thinking must come a determined conviction that the American way of life must be protected by developing and improving it. Our place in international society must follow biological laws in which increasing vigor and strength of growth are the determining factors. While chairman of the National Security Resources Board, W. Stuart Symington said, "Health and strength are one and the same. Survival of the fittest was the law of primitive jungle and is, in fact, the law of all life on this earth. As a nation, we are strong today because we are healthy in mind and body. We know that our basic strengths can prevail against any attack. But we must be eternally vigilant to increase our powers to the full. We must be strong to survive as a free nation." Health and welfare services of civil defense are its most important activities. The citizen's interest in civil defense, even if it is apathetic, is largely in the health and welfare field, and Congress has given most of the meager funds to it.

The emotional unrest and confusion about civil defense is the immediate mental health problem. It should be of great concern to everyone that there is not developing rapidly a strong civil defense program. To many, civil defense means picking up the pieces after an attack. In order to stimulate interest, the dangers of the atomic bomb and biological warfare have been emphasized. Many people are frightened and anxious. The creation of fear will never build a sound civil defense.

THE PHYSICIAN AS A MORALE BUILDER

You may wonder why practitioners of medicine are involved in these matters. The reason is so natural that it does not seem obvious at first thought. In times of stress, uncertainty, and anxiety people go to their physician for help. Counseling is one of the physician's most cherished functions in society. To his patient, the physician is an authority on health and how to maintain it. It is the feelings of the individual citizens who are our patients that make up the mental health of the nation, or what may be called morale or patriotism. People expect every physician to prepare himself by training and preparation to meet every health need in this emergency. They need to be assured that their own physician knows how to treat the injuries caused by the atomic bomb, by chemical warfare, and by biological warfare. They should be told how these special weapons cause injury. They will lose some of their fear of the atomic bomb when they learn that less than a fifth of the serious injuries would be caused by radiation and that recovery from radiation injury leaves persons relatively normal and not sterile. When they learn about these injuries, they will understand the plans that are made for their protection. They will learn how to protect themselves.

Every new weapon that has been developed has lost much of its effectiveness as soon as its limitations were understood. The only way to forestall flight and panic is to have every citizen know that his chances of survival are better if he understands and cooperates with civil defense planning. This planning is based on careful studies and will have well-selected and well-trained leadership. I think the physician has a duty and an opportunity to exercise the leadership in his community that his profession provides. Physicians come into contact with many people; they receive many confidences. We need to learn how to help our patients face the threat to our nation and a free world and how to protect themselves so they can participate to the fullest in our na-

1. United States Strategic Bombing Survey, Final Report of Civilian Defense Division, 1947, p. 55.
2. Personal observation in study of Emergency Medical Service in Industry, Strategic Bombing Survey.
3. Hoffman, P. G.: Peace Can Be Won, Garden City, N. Y., Doubleday & Company, Inc., 1951, p. 14.

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tional defense. Every citizen's effort is important and necessary to build the national defense, no matter where he lives or what he does. Our responsibility and services in civil defense are just as important as our obligations to the armed services.

TRAINING OF PHYSICIANS

Organization.—Responsibility for the organization of the health program of civil defense has been largely placed in the hands of local and state public health officers. We, as practitioners, have had little part in the planning of civil defense, although we are the ones who must furnish the health services. Following the tradition which has characterized our profession, we have the task of training ourselves. This, I think, should be the responsibility of organized medicine at the national, state, and county society level. Every state association has been asked to organize a Council on National Emergency Medical Service. Every county society should have a Civil Defense Committee. The Texas State Medical Association has given its Council on National Emergency Medical Service the responsibility of organizing and conducting teaching courses for its membership. This council is to work with the Council on Public Relations in stimulating physicians to assume community leadership in civil defense.

Teaching Materials.—Most of the information needed for these training courses is in preparation and will soon be available. These materials are being organized by the Health and Welfare Division of the Federal Civil Defense Administration. A large part of the preparation is being done by such authoritative bodies as the National Research Council and the Department of Defense. We should ask the Federal Civil Defense Administration to prepare outlines in the form of texts and references for this teaching.

Subject Matter.—The teaching material can be roughly classified under two subjects. The first is the nature of the special weapons of warfare and how they cause injuries. The treatment of these injuries is the same as we use in every day practice. We need to learn only a few special techniques of treatment and to adapt ourselves to some standardizations of treatments so we can work with other physicians and with the supplies that will be furnished.

The second subject is that of mental health or psychological defense. This can be discussed under two headings: (*a*) the emotional needs of the individual patient; (*b*) prevention and control of panic or group disruptive behavior.

EMOTIONAL NEEDS OF THE INDIVIDUAL

Many patients needing the attention of a physician will be victims of emotional as well as physical trauma. Since there will not be enough psychiatrists to meet the need, every physician must learn some of the skills and techniques required to calm the fears of these patients. Such emotional states are not complicated. They arise from a known cause;[4a] they are of short duration and are common to many patients; they can be dealt with simply and directly. The physician will often be treating patients whom he knows; or the patients will know of the physician, and he will be completely acceptable to them. The physician can assure the patient that he knows how to treat the injuries. He can explain to the patient the necessity of his accepting some of the new and strange experiences he may have in being treated along with large numbers of others. Our job can be described as the prevention and direct treatment of fear.

It will be important that serious emotional disturbances be detected and that the patients affected be directed to some center where they can be observed and treated by psychiatrists. This must be done skillfully in order that the procedure of arranging for better care does not add additional emotional trauma. Such patients must not be labeled as different, nor should they be sent to mental hospitals until it is determined that they need such serious and extensive treatment. Most of this group—and from the English experience in World War II it will be a relatively small group [4a]—will probably respond to simple treatment by skilled psychiatrists.

Teaching the practitioner the simple techniques of psychological first aid is very important.[4b] It will not be easy. There has been considerable experience in postgraduate courses lasting one to three weeks. The subject will have to be reduced to its simplest elements and prepared in a palatable form. It will have to be presented in about an hour's time. The Civil Defense Committee of the American Psychiatric Association is preparing a suitable primer for the Federal Civil Defense Administration.

PREVENTION OF PANIC

Group panic and other mass disruptive reactions present a problem that awaits further study.[4c, d] The role of the physician in the prevention of poor group behavior is not clear, nor have general plans of education or training to prevent or control it been formulated. Poor group behavior in time of stress must be studied. Such behavior may be due to alarm reactions to either true or false reports or rumors. It may vary from staying away from work, due to changes in motivation, to war panic, mob hysteria, and the like; or there may be public apathy, lack of concern, and other evidences of repressed emotion. The need for studies is recognized by every responsible group in the field of mental health and in the Departments of Defense.[4] Well-planned studies are under way and more are being projected. To realize how important these studies are, one has only to recall the panic that resulted from Orson Wells's radio broadcast, "The Invasion from Mars," and the chaos and poor group behavior in the Texas City explosion, as well as many other historic instances of panic.

Until these studies result in a planned program, we physicians will have to rely on known aids to emotional security. A brief listing would include (1) information about the nature of the special weapons of warfare, calling attention to their limitations and to the protection

4. (*a*) Waggoner, R. W., and Himler, L. E.: Psychiatric Aspects of Civilian Defense, J. Michigan M. Soc. **50**: 278-281 (March) 1951. (*b*) An Introduction to the Psychiatric Aspects of Civil Defense, Committee on Cooperation with Governmental Agencies of the Group for the Advancement of Psychiatry, Report No. 19. This excellent study with a bibliography is available to any professional person on request of two or more copies at 10 cents each from Group for Advancement of Psychiatry, 3617 West Sixth Ave., Topeka, Kan. (*c*) Caldwell, J. M.; Ranson, S. W., and Sacks, J. G.: Group Panic and Other Mass Disruptive Reactions, U. S. Armed Forces M. J. **2**: 541-567 (April) 1951. (*d*) Cameron, D. C.: Psychiatric Implications of Civil Defense, Am. J. Psychiat. **106**: 587-593 (Feb.) 1950.

afforded by the type of construction of our buildings as contrasted with that of the Japanese buildings; (2) knowledge of and understanding of the plans made to care for people; (3) emphasis on the importance of everyone having a job to do and the contribution of that job to the total effectiveness of our protection; (4) strong leadership that inspires confidence; (5) adequate welfare plans; (6) mutual aid plans (surrounding communities coming to the aid of a damaged community) understood by everyone; and (7) local mental health programs. We must realize that we are being subjected to psychological warfare, and we must learn to identify it.

Although it is more important to prevent group disruptive behavior, plans must also be made to interrupt it in its early development when it does occur and modify its course. So far, no program other than ordinary police function has been proposed. It may be possible to have what might be described as an intelligence service, in which competent observers widely scattered through our society would be alert to unusual group behavior or stories that might be the beginnings of serious rumors. They could report these to a selected group of citizens made up of social scientists, personnel directors, psychiatrists, and others who deal with groups, such as teachers. This selected group, in conference, would be in a position to advise what course should be taken and could work in an advisory capacity with police. It does seem that we should plan as intelligently as possible in facing these problems so vitally concerned with a healthy society.

SUMMARY AND CONCLUSION

Military combat is only one of the methods of warfare of our enemy. The others are political, economic, and psychological. Civil defense means more than an organization to treat injured or "pick up the pieces." It means an organized, intelligent effort to make our nation strong to meet any danger or attack. The public's major interest in civil defense is in the health and welfare division. The people expect us to be the leaders in health and welfare. We have never had a greater challenge to assume leadership as an organized profession or as individual citizens. We must train ourselves to do the job that is expected of us. With preparation, we have in our relationship with patients and as community leaders the opportunity to be a major force in building strength and courage needed for survival as a nation.

4105 Live Oak St.

Cancer Research.—It has become popular to decry the progress which has been made in the cancer field and to deprecate the possibility of advance in the future. Were history not so full of similar melancholy statements made regarding other disorders at times when irrefutable evidence to the contrary was at hand, the present cries of alarm might give concern. True, the problem is a difficult one, and the techniques complex. Recall, however, that most work on cancer has been on a random basis and so has included a broad study of natural phenomena relating to growth in general. This has restricted studies designed specifically to attain chemical control of the disease. In spite of the fact that substantial funds for cancer work have been available only since 1945, and that only a small part of them has been allotted to therapeutic studies, the progress has been gratifying indeed.—Cornelius P. Rhoads, M.D., The Experimental Method and the Cancer Problem, *Bulletin of the New York Academy of Medicine*, October, 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

R. T. STORMONT, M.D., *Secretary.*

MISAPPROPRIATION OF SCIENTIFIC TERMINOLOGY FOR DRUGS

Generic (nonprotected) names for drugs are of scientific importance to all investigators and physicians. More general usage of established scientific drug terminology in prescriptions, publications, and speeches obviates confusion and constitutes a step toward simplification of world-wide nomenclature for therapeutic agents.

One of the obstacles which hinders universal employment of nonprotected drug terminology is the practice of trademark registration of generic names (or their near equivalent) outside the legal jurisdiction of the country of origin. This prevents the free use of generally recognized nonprotected terminology in the country which permits trademark registration of such names. Information available to the Council indicates that this practice is often followed in various countries by pharmaceutical manufacturers who either do not realize the universal importance of scientific terminology for drugs or are motivated chiefly by commerical interest. The extent of this is revealed by the following partial list of names registered, or applied for registration, in various foreign countries. These names are identical to, or quite closely resemble, the nonprotected terminology adopted in the United States:

aminophyllin(e)	hexylresorcinol
antitoxon (antitoxin)	histamin(e)
ascorbic (acid)	neostigmin(e)
bacitracin	penicillan (penicillin)
cortisone	procain(e)
estradiol	progestone (progesterone)
foliacid (folic acid)	sulfacetamide
heparine (heparin)	testosteron(e)

The Council wishes to bring this matter to the attention of all pharmaceutical firms, appropriate government agencies, and scientific groups throughout the world. It is hoped that piracy of generic names for drugs, irrespective of the country of origin, eventually may be outlawed in the interests of universal scientific cooperation. Legal immunity provided by the limits of jurisdiction among countries does not justify usurpation of scientific names recognized elsewhere. The generic status of nomenclature formally adopted by recognized scientific groups of any country should be universally respected by pharmaceutical manufacturers.

The Council issues this statement with the warning that piracy of scientific terminology for drugs is highly detrimental to the dissemination of knowledge concerning drugs and therapy.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Hyaluronidase.—Alidase (Searle).—Wydase (Wyeth).

Hyaluronidase is an enzyme or enzyme-complex which is capable of hydrolyzing the mucopolysaccharide, hyaluronic acid. It can be isolated from various bacterial cultures or animal tissues. The activity of the enzyme is usually determined either by measuring the reduction in turbidity which hyaluronidase produces when it acts on a substrate containing native hyaluronate and certain proteins, or by measuring the reduction in viscosity which hyaluronidase produces on a buffered solution of sodium

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or potassium hyaluronate. At present, each manufacturer defines his product in terms of turbidity or viscosity units, depending on the system of standardization used. These units are not equivalent since they are measures of different properties of the enzyme.

Actions and Uses.—Hyaluronic acid, an essential component of the "ground substance" of tissues, limits the spread of fluids and other extracellular material. Since hyaluronidase destroys tissue hyaluronic acid, injected fluids or other material tend to spread further and faster than normal when administered in conjunction with this enzyme.

Hyaluronidase may be used to increase the spread, and consequently the absorption, of hypodermoclysis solutions; to diffuse local anesthetics at the site of injection, particularly in nerve block anesthesia; and to increase the diffusion and absorption of other injected materials such as penicillin.

Hyaluronidase also enhances local anesthesia in surgery of the eye. It is useful when administered as a cone injection in glaucoma, since it causes a temporary drop in intraocular pressure.

Hyaluronidase is practically nontoxic, but caution must be used in administering it to patients with infections. The enzyme may cause local infections to spread through the same mechanism by which the spread of injected solutions is facilitated. *Until further evidence is available, hyaluronidase should not be injected into or about an infected area.*

Sensitivity to hyaluronidase occurs infrequently. It can be discovered by testing the skin in the usual manner.

Dosage.—Hyaluronidase is supplied in dried form because it deteriorates on standing in solution. The extemporaneously prepared solutions for injection should contain 150 turbidity units or 500 viscosity units dissolved in 1 cc. of isotonic sodium chloride solution or, with the appropriate amount of that salt, in distilled water. This solution is added to each 1,000 cc. of hypodermoclysis fluid or injected at the site to be employed immediately prior to instituting the clysis. Special care is advisable in pediatric patients to control the speed and total volume of fluid administered to avoid over-hydration; in children less than 3 years of age the volume of a single clysis should be limited to 200 cc.; in premature infants and during the neonatal period, the daily dosage should not exceed a volume of 25 cc. per kilogram of body weight; the rate of administration should not exceed 2 cc. per minute. In adults the rate and volume of administration should not exceed that employed for intravenous infusion.

The agent also is used for addition to drug preparations or to small amounts of anesthetic solutions for subcutaneous injection. For nerve block or infiltration requiring larger amounts of anesthetic solution, 150 turbidity units or 500 viscosity units and 0.5 cc. of epinephrine hydrochloride 1:1,000 are added to each 50 cc. of solution and injected intracutaneously, subcutaneously, or intramuscularly.

For local anesthesia of the eye, 150 turbidity units or 500 viscosity units are dissolved in 1 cc. of a 2% procaine hydrochloride solution (or equivalent amount of other anesthetic to be used) and 0.4% potassium sulfate. For nerve block, 0.4 cc. of this mixture is diluted to 10 cc. and 0.12 cc. (two drops) of epinephrine hydrochloride 1:1,000 is added prior to injection. For cone injection, twice as much epinephrine may be used.

Alidase (Dried): Ampuls containing 500 viscosity units of powdered hyaluronidase and 9 mg. of sodium chloride. G. D. Searle & Company, Chicago.

Lyophilized Wydase: Vials containing 150 or 1,500 turbidity-reducing units of powdered hyaluronidase. Preserved with 0.01 and 0.2 mg. of thimerosal, respectively. Wyeth, Inc., Philadelphia.

Bacitracin (See New and Nonofficial Remedies 1951, p. 43).

Ointment Bacitracin: 14 gm., 28 gm., and 112 gm. tubes. An ointment containing 500 units of bacitracin in each gram. Eli Lilly & Company, Indianapolis.

Ophthalmic Ointment Bacitracin: 7 gm. tubes. An ointment containing 500 units of bacitracin in each gram. Eli Lilly & Company, Indianapolis.

Solvets Bacitracin: 2,500 units. Eli Lilly & Company, Indianapolis.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

RALPH E. DE FOREST, M.D., *Secretary.*

BABY'S HAVEN, MODEL NB5, MULTIPURPOSE INFANT UNIT ACCEPTED

Manufacturer: Modern Hospital Equipment, Inc., 113 S. 10th St., Minneapolis 3.

The Baby's Haven, Model NB5, Multipurpose Infant Unit is a device for housing normal or premature infants, administering oxygen therapy to infants, or isolating infants with contagious diseases. It is provided with casters so that it can be moved about on the floor, has a transparent front so that the infant can be watched from some distance, and has connections for oxygen and electricity. It stands 117 cm. high (46½ in.); the other dimensions are 50 and 30 cm. (31½ and 19¾ in.). It weighs 48 kg. (106 lb.). Prepared for shipment it measures 117 by 86 by 55 cm. (46 by 34 by 21½ in.) and weighs 57 kg. (125 lb.). The foreign shipping weight is the same, and the shipping weights include one sleeping mattress. Accessories not included in the shipping weights are a linen and sanitary supply compartment and an oxygen tank holder. The apparatus requires a supply of 60-cycle alternating current of 115 volts for operation, and draws 330 watts of power.

Baby's Haven, Model NB5, Multipurpose Infant Unit.

From acceptable sources the Council obtained evidence that this device was well constructed and that its performance was as represented by the manufacturer. The Council on Physical Medicine and Rehabilitation voted to include the Baby's Haven, Model NB5, Multipurpose Infant Unit in its list of accepted devices.

KENNIT ELASTIC HOSIERY ACCEPTED

Manufacturer: James R. Kendrick Company, Inc., 6139 Germantown Ave., Philadelphia 44.

Kennit Elastic Hosiery is intended to be worn by patients who need restraining pressure on the surface of the legs, from the metatarsal region to the level just below or just above the knee, particularly in circulatory disorders such as varicose veins. What is described as a two-way stretch is obtained by means of covered elastic yarn reinforced with mercerized cotton. The heel is closed in order to combat swelling in that area. The stocking is made in three styles. *Style K-1* is a garter-type with an open toe and elastic top which comes to below the knee. *Style K-2* is similar in style but has a soft top, from below the knee to the mid-thigh. It is kept in place by the garter from the girdle. *Style K-3* is similarly styled, but the elastic support extends above the knee, and it has a soft top for attachment to the girdle. A single elastic hem at the toe prevents the pressure of a double thickness. All styles are shaped for the average leg, and come in four sizes.

Kennit Elastic Hosiery

The Council obtained, from qualified sources, evidence indicating that these stockings were satisfactory both when tested under laboratory conditions and when worn by patients in clinical trials. The Council on Physical Medicine and Rehabilitation voted to include the Kennit Elastic Hosiery, Styles K-1, K-2, and K-3, in its list of accepted devices.

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THE LOS ANGELES MEETING

The Fifth Annual Clinical Session of the American Medical Association, held in Los Angeles, Dec. 4-7, was an outstanding success in attendance and in interest in the program. The attendance exceeded that of any of the previous Clinical Sessions. The number of physicians who had registered by the final day of the meeting was over 4,400. Swelling this attendance were more than 4,600 guests, including residents, interns, medical students, nurses, and technicians. While the program had been carefully arranged to provide special interest for general practitioners, there was a sufficient variety of subjects and activities to appeal to others than physicians. The scientific and technical exhibitors were pleased with the attendance and interest shown by those who attended the meeting.

There were clinical demonstrations and lectures on more than 300 subjects, a scientific exhibit of 90 or more displays and demonstrations, and motion pictures and television embracing many topics. Medical and television history was made when colored television was first shown on a coast-to-coast hook-up. Originating in Los Angeles, this demonstration was seen by medical audiences in this city and simultaneously in Chicago and New York. While the possibilities of television for teaching have long been discussed by physicians interested in visual education, no transcontinental arrangement of colored television had ever been attempted before. The results demonstrate beyond question the potential value of this medium for education.

A résumé of the proceedings of the House of Delegates and other important events at the Los Angeles meeting will appear in the December 22nd issue of THE JOURNAL. And in this and subsequent issues will appear some of the papers presented at scientific, public relations, and other meetings. An earlier issue of THE JOURNAL published the scientific program. The latter, along with the excellence of the exhibits offered by 150 manufacturers of equipment, pharmaceutical and food products, and by book publishers, were responsible for the popularity of papers, demonstrations, and exhibits.

The scientific program at clinical sessions is not organized into scientific sections as it is at a regular annual meeting; nevertheless at Los Angeles numerous sessions were devoted primarily to pediatrics, dermatology, diseases of the chest, cardiovascular diseases, obstetrics and gynecology, general surgery, general practice, urology, industrial medicine and surgery, eye, ear, nose and throat, radiology, anesthesia and pathology, traumatology as related to civilian defense, and medical blood banks. Other sessions included general lectures of interest to all physicians, which were presented by widely known speakers.

Among the special features of the scientific exhibit was an exhibit symposium on overweight, nutrition, and health, which was followed by a question and answer period. The five exhibits on this subject were continuously demonstrated throughout the week. There was a special exhibit on fractures, at which treatment was stressed by demonstrators. This was also held continuously throughout the week. In addition, there could be found mannequin demonstrations on birth problems and an exhibit symposium on noise and health. The newly adopted method of artificial respiration, which was discussed in detail in THE JOURNAL, Dec. 8, page 1444, was demonstrated by the authors and attracted much attention.

Among the actions taken by the Board of Trustees was an appropriation of another half million dollars to the American Medical Education Foundation, which has been raising funds within the medical profession during the last year for the nation's medical schools. The foundation was created at the December, 1950, meeting of the American Medical Association in Cleveland, at which time the Board of Trustees announced an appropriation of a half million dollars as a nucleus fund to be raised by the medical profession to assist medical schools. Since then, additional funds have been contributed by national, state, and local medical societies, individual physicians, and some nonmedical persons. A full-time office for the foundation has been created and is located at the headquarters of the American Medical Association. This office is necessary to assure the attention that the foundation deserves, but in no way causes a financial drain on the funds collected, as the American Medical Association is underwriting the total expenses involved in raising these funds. Thus, every dollar that is contributed is allocated, with no loss for administration, to medical schools.

Among the visitors to the House of Delegates of the American Medical Association was Donald R. Wilson, Clarksburg, W. Va., national commander of the American Legion. In an inspiring address he paid tribute to the American physician and his determination to provide basic answers to the problems of medical care facing the people of this country. He warned that the medical profession must be the watchdog of American health and that the American people must look to it for leadership, planning, and results. He said in part: "You may depend on us to carry our full share of what is primarily your battle. We shall do it not only for your good but also for the good of the American people. We see and understand your problem and are prepared to render whatever service we can."

Some idea of the interest and appeal of this meeting of the American Medical Association was reflected in the coverage provided by newspaper and magazine writers. This was the largest group of writers ever assigned to report on a Clinical Session of the American Medical Association. Los Angeles and other West Coast newspapers gave liberal amounts of space to physicians and to medical achievements. In fact, one prominent civic official said on the last day of the meeting that he had never seen so much space devoted to one organization at any time in Los Angeles. This response by the press was taken by many observers as an indication of the increased popularity of the Clinical Session of the American Medical Association.

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RESISTANCE TO INSECTICIDES

Because of the great military and civilian importance of the newer insecticides in the control of malaria, pediculosis, and other insect-borne and insect-caused diseases, it is disturbing to note that an increasing number of insect species are becoming resistant to these compounds. In a recent symposium[1] on the subject presented at the annual meeting of the National Malaria Society in Chicago, it was pointed out that in many parts of the world strains of the house fly, the mosquito, and the bed bug have become resistant to a variety of insecticides and that most recently the body louse in Korea has become highly resistant to DDT.[1a]

According to the investigators who participated in the symposium, the pattern of resistance is characteristic. It develops most readily in the domesticated, adaptable species and first appears after the insecticide has been in use in a given area for one to five years.[1a] In the mosquito it appears more rapidly when the larvae as well as the adults are sprayed.[1b] Exposure to one compound may induce resistance not only to that compound but also to related insecticides. Flies made resistant to DDT, for example, show a cross resistance to methoxychlor, while those made resistant to lindane, chlordane, or dieldrin also show resistance to the other two members of this group.[1c] Once resistance to a single compound or group of compounds develops in a strain, that strain tends to become resistant to other insecticides more rapidly. The house fly that requires 6 to 12 generations to develop resistance to DDT in the laboratory may then require only one or two additional generations to develop resistance to other compounds.[1c] Strains that have become resistant do not usually revert to the nonresistant state after withdrawal of the insecticide.[1a]

The mechanism of resistance in insects may be physiologic, anatomic, or behavioral.[1a] Slight metabolic differences in some strains may permit them to carry on vital functions even in the presence of insecticides. Morphologic variations in others may prevent the lethal action of these drugs, while peculiarities in behavior in still others may have survival value. In a DDT-sprayed building, flies that tend to settle on horizontal, untreated surfaces survive in greater numbers than those that settle on the vertical, sprayed walls. Likewise, flies that rest quietly on a treated wall have a greater chance for survival than those that move about continuously, since they come in contact with less of the insecticide.

No satisfactory means of preventing the development of resistance to insecticides is yet available. According to Hess,[1a] it is useless to continue the search for new insecticides, since the same mechanisms that account for resistance to currently used preparations will probably be capable of producing resistance to any new compounds that are developed. He recommends an immediate return to the older principles of sanitation in the management of insect-borne diseases until fundamental research can yield more information on the mechanisms and prevention of resistance. Chadwick,[1d] too, stresses the importance of physiologic studies on the mode of action of insecticides and the processes by which insects escape their toxic effects. He feels that only by acquisition and synthesis of this type of knowledge can we expect to prevent future resistance to insecticides.

HYALURONIDASE AND VASCULAR PERMEABILITY

The ability of testicular extracts to increase the permeability of connective tissue was described independently by Hoffman and Duran-Reynals [1] and by McClean [2] in 1930. In 1939 Chain and Duthie [3] demonstrated that this "spreading factor" was due to a mucolytic enzyme, hyaluronidase. During the same year, Duran-Reynals [4] reported that testis extracts which increased tissue permeability also increased capillary permeability. At this time he suggested that the spreading factor might be responsible for both effects, but in a later review he referred to unpublished work that indicated a dissociation between the two activities.[5] Studies by other investigators have yielded conflicting results, some [6] supporting Duran-Reynals original suggestion and others [7] casting doubt on the identity of the capillary permeability factor and the spreading factor. Believing that the discrepant results were due to differences in the relative purity of the testis extracts, Benditt and his associates [8] compared the effect of highly purified preparations of hyaluronidase on vascular permeability in rats with two crude preparations of the enzyme, one of which served as the starting material for the more purified extracts. After the intravenous administration of Evans blue, rats received equivalent quantities of the various testis extracts, in terms of hyaluronidase activity. Thirty minutes later, the animals were examined for evidence of increased capillary permeability as manifested by grossly apparent edema and tissue coloration, increased hemoglobin concentration, and dye disappearance. Results indicated that the crudest preparation had vascular permeability-increasing activity while preparations of higher purity lacked this ability. This was also seen when comparable amounts in terms of hyaluronidase activity of crude and purified preparations were injected intracutaneously in

1. Panel on Resistance of Insects to Insecticides, presented before the 34th Annual Meeting of the National Malaria Society, Chicago, Nov. 16, 1951, to be published. (*a*) Hess, A. D.: Significance of Resistance to Insecticides in Vector Control Programs. (*b*) Knipling, E. F.: Present Status of Mosquito Resistance to Insecticides. (*c*) Decker, G. C., and Bruce, W. N.: House Fly Resistance to Chemicals. (*d*) Chadwick, L. E.: The Current Status of Physiological Studies on Resistance to Insecticides.

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rats after the intravenous administration of Evans blue. On the other hand, the purified hyaluronidase preparations retained their spreading activity as evidenced by observations on the spreading of india ink and Evans blue in the skin of rabbits and rats. Benditt and his associates are now endeavoring to purify and further characterize the vascular permeability-increasing factor shown by them to be independent of the hyaluronidase and spreading activities of testis extracts.

ANTERIOR PITUITARY AND HYPOTHALAMUS

A functional relationship between the hypothalamus and the neurohypophysis has been generally accepted since Ransom and his associates [1] showed that interruption of the supraoptic hypophysial tract leads to retrograde degeneration of the cells of the supraoptic and paraventricular nuclei, atrophy of the neurohypophysis, and diabetes insipidus. In contrast, the question as to whether the hypothalamus exerts control over the anterior lobe of the pituitary is still highly controversial. While it is generally agreed that few if any of the nerve fibers of the supraoptic hypophysial tract penetrate into the anterior lobe, some investigators feel that the hypothalamus exercises control over the anterior pituitary by liberating a humoral agent that is transmitted by the hypophysial portal blood supply.[2] Others, however, have questioned this concept, postulating that loss of anterior function following destruction of the portal system may be due to cellular destruction secondary to ischemia rather than to interruption of a neurovascular link between the hypothalamus and the pituitary.[3]

An entirely different approach to the question of relationship between anterior pituitary and hypothalamus has been offered by Bodian and Maren [4] with their presentation of evidence suggesting that the anterior pituitary exerts a trophic effect on the hypothalamic nuclei. These investigators studied two groups of rats subjected to partial hypophysectomy. In the first group, approximately half of the neurohypophysis was removed, as was the intermediate lobe. The anterior lobe, however, remained almost completely intact, and, while it appeared to be completely isolated from any possible connection with the hypothalamus, its function was apparently well preserved. In the second group, the greater part of the adenohypophysis was removed together with about half of the neurohypophysis. Some three months after operation, the animals were killed and the hypothalamic nuclei were examined histologically. In the first group of animals, it was found that the means of the number of cells in the supraoptic nucleus and the magnocellular part of the paraventricular nucleus were 34% and 37% of normal, respectively, while the corresponding figures for the second group were 24% and 15%. In both nuclei, the differences between the two groups of animals were found to be significant. There was thus an unexpectedly severe cell loss in hypophysial nuclei following partial neurohypophysectomy and total adenohypophysectomy. The authors suggest that some of the cells having end-arborizations in the neural lobe may also have proximal collaterals in the hypothalamus and that retrograde degeneration of these cells may not follow destruction of the end-arborizations, provided the anterior lobe function is adequate. Since no nervous connections remained between hypothalamus and pituitary in the second group of animals, they suggest that this postulated trophic relationship between the hypophysial hypothalamic nuclei and the anterior pituitary involves a humoral factor. As they point out, the crucial test of the role of anterior lobe hormonal factors would be the effect of substitution therapy in preventing the additional cell loss in hypophysial nuclei that appears to follow anterior lobe ablation.

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4. Bodian, D., and Maren, T. H.: Effect of Neuro- and Adenohypophysectomy on Retrograde Degeneration in Hypothalamic Nuclei of the Rat, J. CVomp. Neurol. 94:485, 1951.

THIRD NATIONAL CONFERENCE ON PHYSICIANS AND SCHOOLS

The Third National Conference on Physicians and Schools was held at the Moraine Hotel, Highland Park, Ill., Nov. 6-8, 1951. The conference was sponsored by the American Medical Association through its Bureau of Health Education as the third in a series of conferences, the first two of the same nature having been held in 1947 and 1949.

State medical societies, state departments of education, state departments of health, and national health agencies were invited by the American Medical Association to send delegates to the meeting. One hundred eighty-three participants representing 129 agencies and organizations came from 35 states, Hawaii, and the District of Columbia to attend the conference. Forty consultants of national reputation in the fields of public health, public education and medicine served as discussion leaders. Several foreign visitors on tour of the United States attended as observers.

Five discussion groups considered specific aspects of health services for school age children. Every effort was made to include an equal representation from the various agencies in each of these groups. Each group held three working sessions, during which specific recommendations on policies for school health work were formulated. At general sessions, Dr. Ernest Howard, Assistant Secretary and General Manager of the American Medical Association; Dr. Edwin S. Hamilton, American Medical Association, Board of Trustees; Clyde Parker, superintendent, Cedar Rapids (Iowa) Public Schools; and Dr. W. W. Bauer, Bureau of Health Education American Medical Association, appeared as speakers or discussion leaders. One general meeting was given over to reports describing the school health activities of medical societies in selected states. The concluding session was devoted to reports of the recorders, who summarized the recommendations for the five discussion groups.

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General interest in these biennial conferences on school health, as reflected in a steadily increasing attendance from all the agencies concerned, indicates the growing significance of the meetings to both the medical profession and the other groups concerned. Evidence of improved relationships and better understanding among educators, private physicians, and public health personnel were apparent not only in the accord achieved on school health policies and principles but also in the numerous requests that the national conferences be continued at two-year intervals and that efforts be made to encourage similar meetings at state and local levels.

The sponsoring of these national conferences is only one among a number of American Medical Association activities carried on to interpret to education and public health personnel the important role of the private physician in school health. For over 40 years the American Medical Association has had a Joint Committee on Health Problems in Education with the National Education Association. Its purpose is to provide a counseling group representative of the combined medical educational viewpoint to which the schools may turn for advice on health problems. The staff of the Bureau of Health Education at the American Medical Association also participates in numerous school health activities, including attendance at meetings and institutes, participation in the committee work of many agencies and associations, the preparation of articles, radio programs, and transcriptions on school health subjects, all of which are designed to aid in the development of sound programs of school health within the framework of the private practice of medicine.

While representation at the conference from state medical societies, state departments of education, and state departments of health was fairly well equalized, and more delegates from state medical societies attended than in previous years, there is still need for greater representation of the constituent state societies. In several instances, one person was designated to represent both the state medical society and the state health department. In one case, the state health commissioner represented all three of the state agencies. Such designations demonstrated fine relationships in the states concerned and are to be commended. However, at a conference sponsored by the American Medical Association with great emphasis given to the role of the private practitioner in school health services, it is imperative that the viewpoint of the physician in private practice be fairly presented. This can be accomplished only if each state medical society will make the strongest possible effort to assure the attendance of a practicing physician as its representative at future conferences. Only then can these meetings achieve the full purpose for which they are designed. The guidance and counsel of the practicing medical profession are needed if school health programs are to develop along sound lines. The National Conferences on Physicians and Schools furnish an unequaled opportunity to provide the needed leadership.

TWELFTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The Twelfth Annual Congress on Industrial Health will be held Friday and Saturday, Jan. 18 and 19, 1952, at the William Penn Hotel in Pittsburgh. The Council on Industrial Health of the A.M.A., the Medical Society of the State of Pennsylvania, and the Allegheny County Medical Society will act as co-sponsors. The American Academy of Occupational Medicine is meeting at the same time and in the same place, and certain sessions will be jointly conducted. On Saturday, the Council on Industrial Health has asked for and received collaboration from the Woman's Auxiliary of the American Medical Association in a full-day presentation on the important place that the American housewife occupies in industrial production as homemaker and increasingly as participating worker.

These interrelations illustrate the pervasive influence of indusfrial health and of medical services to industrial workers. The congress programs have repeatedly called attention to the demands industry makes on almost every medical specialty for treatment, for prevention, or for conservation. In much the same way, programs or experiments in the provision of medical care for industrial groups or union members represent movements of tremendous vitality and interest. In consequence, the subject matter under discussion at these meetings cannot be confined solely to scientific matters but tends more and more to incorporate significant developments in the socioeconomic field.

The general theme of the sessions during the coming congress will be industrial health services as a significant factor in the whole health picture of individual workers, requiring planned integration with many other community health resources—the practicing medical profession, the official and voluntary health services, and organizations dealing with housing, nutrition, and recreation. The favorable effects of an industrial health service can frequently be discounted by unhygienic habits or conditions away from work, where most time is spent.

On Jan. 17, the day preceding the congress, the Council on Industrial Health meets jointly with representatives of the state medical society committees on industrial health. These sessions have been held for a number of years and have proved helpful in the interchange of ideas and experiences. The Commission on Industrial Health of the Medical Society of the State of Pennsylvania is presenting a full-day discussion of its experiences in meeting the industrial health problems of a great industrial commonwealth. As industrial physicians and private physicians meet on common ground and recognize the necessity for mutual aid and understanding, genuine cooperation usually develops. It is hoped that every industrial health committee will have representation there.

The program of the congress may be found elsewhere in this issue of THE JOURNAL. Those who plan to attend should make hotel reservations early.

ORGANIZATION SECTION

PROCEEDINGS OF MEETING OF HOUSE OF DELEGATES

ANNOUNCER: Good evening, ladies and gentlemen. Tonight you are part of a vast nation-wide audience, participating in an historic event with some 6,800 persons here in the great Shrine Auditorium in Los Angeles. In just a few minutes you will hear the broadcast of a great, nonpartisan forum bringing together two eminent United States Senators, representing our two major political parties, in a dramatic discussion of the day's great national issues. It is a real American audience that is waiting for this colorful drama to begin—people from all walks of life, civic leaders and housewives, motion picture stars and club women. In a special section down front, along with their wives and guests, are your hosts—members of the House of Delegates of the American Medical Association, meeting in its Fifth Annual Clinical Session here in Los Angeles. On the flag-draped stage are seated the officers of the American Medical Association and members of its Board of Trustees and Coordinating Committee. Seated with them are the two distinguished United States Senators who will speak to you tonight on the critical issues now facing the nation—Republican Senator Robert A. Taft of Ohio and Democratic Senator Harry F. Byrd of Virginia. Now the Speaker of the A. M. A. House of Delegates, Dr. F. F. Borzell, of Philadelphia, has raised his gavel to call the House to order. The next voice you hear will be that of Dr. Borzell.

DR. BORZELL: The House of Delegates of the American Medical Association will come to order. This eventful meeting of the House will proceed with the important business at hand. I now call upon the President of the American Medical Association, Dr. John W. Cline of San Francisco.

DR. CLINE: Mr. Speaker, Distinguished Guests, Members of the American Medical Association, and Fellow Americans:

This is not only a significant occasion in the annals of the American Medical Association, but it is also a memorable occasion in the political and economic life of the entire nation. Tonight we shall hear from two of the most able and highly respected representatives of this country's major political parties. It is fitting that the American Medical Association should provide a forum for these distinguished Americans.

Our Association is a large, nonpartisan, professional organization, representing a wide cross section of American thinking. Our membership includes approximately an equal number of Democrats and Republicans. During the past three years our fight against socialized medicine has been conducted on a nonpartisan basis, and, because of that, we have won overwhelming, nonpartisan support from members of both parties and from all segments of the American public.

In that same spirit we gather here tonight, with a feeling of concern over the vital issues which confront our country, not as they might affect the temporary fortunes of either political party, but as they will influence the entire future of this great nation. And here tonight we soon shall have the privilege of listening to a highly significant preview of the major issues in The Great Debate of 1952.

Each of our distinguished guests is completely free to say what he thinks on both domestic and international issues, but, knowing the character of these men, I am confident each of them will make his views clear on what we believe to be the key issue in America today—freedom versus socialism.

The first of our two speakers represents the Republican Party. In fact, he often is called "Mr. Republican," which in itself is a tribute to his stature in the affairs of our nation. He is a member of one of this country's best-known and most illustrious families. His father was the 27th President of the United States, and there are many who feel the son may follow in his father's footsteps.

A lawyer by profession, he has served in public life most of the time since 1917, when, during the first world war, he became an assistant counsel for the United States Food Administration. Later, for several years, he was first a Representative and then a Senator in the Legislature of his home state of Ohio. Since 1939 he has been one of the nation's most conscientious leaders in the United States Senate, and he was re-elected last year in one of the most dramatic and decisive election contests of 1950.

His political adversaries, as well as his friends, agree that he is a man of high intellectual attainments, great moral courage and political integrity. He is, today, a leading contender for nomination as the Republican candidate for President of the United States.

Ladies and Gentlemen, I am pleased to introduce the senior Senator from Ohio—the Honorable Robert A. Taft.

SENATOR TAFT: The American Medical Association is one of the leaders in the battle of liberty against socialism. I appreciate the opportunity they give me tonight to discuss that issue with the people of the United States. The fundamental problem before the American people today is how best to maintain the great progress they have made under liberty, and pursue their destiny to higher spiritual and material goals. That liberty is threatened by the forces of communism from abroad. It is threatened by the growing socialism and government control at home.

Liberty has been the key to our progress in the past, and it is the key to our progress in the future. I do not underestimate the value of democracy, a government by the people, but to me it is peculiarly valuable because it is more likely than any other form of government to assure liberty. But even under democracy liberty may be destroyed if the people become arbitrary rulers, or give arbitrary power to their representatives. Then liberty may disappear while the form of democracy remains. It is the great merit of the American form of government that it undertakes to protect the liberty of minorities even against an autocratic majority of the people themselves.

What do I mean by liberty?

I don't like the term "free enterprise" because it seems to mean only the liberty of business, which is a small element. Liberty means your right and the right of every man to live his own life and think his own thoughts; to have those thoughts taught by others if you can find men who believe in them. Liberty is your right to spend the proceeds of your labor in such a way as you want to spend them, with only a reasonable deduction for the necessary costs of government. It means the liberty of local self-government: the right of every community to decide on its local institutions, how its children shall be educated, what local services shall be rendered and how, the form of local government, all without direction by some federal bureau in Washington; the right of states to run their own affairs. Liberty includes your right to choose your own occupation and run your own professional activities or business or farm as you see fit to run it, except for such control as may be necessary to assure a similar freedom to others.

The results of liberty in the United States, where it has had a longer sway than in any other nation, has been a constant improvement in ideas and research and methods in every field of intellectual activity, in science, in welfare, and in knowledge. It has trained people to think for themselves and cultivate self-reliance. American armies have been the best armies in the world, not because of better discipline, but because the American soldier has met each problem by thinking for himself. The American system, by offering incentive and reward and liberty, has steadily increased the productivity of the American workman and the American farmer, and, because the more goods are produced per person the more there is to divide up per person, his standards of living, your standards of living. It is not so much that you or I are free and enjoy being free. It is that millions of Americans are free, and the competition of their ideas causes the best ideas to rise to the surface and finally prevail. Our business system is

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such that any man can have an idea, but also can have the idea tried out without getting the approval of some government clerk.

The man who has profited most from this liberty has been the man of low income. The wages paid in this country are more than twice those paid in Great Britain, and the average American worker has twice as much of all the things that make life worth while—of good homes and home equipment, automobiles, recreation and opportunities in every field of life.

This liberty is threatened today by what is roughly called socialism. By that I mean the growing power of government in the affairs of all of you individuals, and its increased activity in many fields where it has never heretofore been involved. Socialism is a matter of degree, because some fields of activity must be and some have been always conducted by goverment, notably the post office and public schools and public roads, but for many years the proportion of government activity was more or less static. In 1931, for instance, the federal government conducted 6 per cent of the country's activity and collected 6 per cent of your income in taxation to do it with. The state and local governments took about the same amount, or a total of 12 per cent. In 1949, before this mobilization program started, the government was already spending 10 times as much money as it spent in 1931, and had moved up to 18 per cent of all our activity plus 8 per cent more for state and local government, or more than 25 per cent of all the activity of our nation. The share of government had more than doubled. By 1953 the government will be spending 38 per cent of the total income. In Great Britain the government takes about 40 per cent.

The federal government has gone into many businesses for itself, and threatens to go into more. It has undertaken to regulate all industry and commerce and agriculture with great federal bureaus and huge subsidies. It has taken over functions which were almost exclusively local, and it threatens to take over all welfare services through a scheme known as social insurance which is not insurance, but simply more taxation to support free federal welfare services.

The American Medical Association has taken the lead in opposing this trend, and the doctors are justified in this because the key move of the socialists today is the effort to set up a federal system of socialized medicine. The government proposes to collect 6 or 7 billion dollars, mostly in payroll taxes from workmen, and set up a vast federal bureau to employ nearly all the doctors in the country to furnish free medical service to all the people, including the great majority who are perfectly able to pay for it themselves. The program, of course, would supersede all our private, state, and local activity in furnishing medical care. It would destroy the independence of the American medical profession, which is responsible for more improvements in health care and remedies for disease than any profession in the history of the world. It would bring the federal government's agents into every home more than any other service could possibly do. If the service is like most federal services, or like that of Great Britain, it would be pretty poor service.

But medicine is only the opening wedge. In Great Britain the government furnishes free service for the birth of babies, for the support of children, for burial at death, and for every misfortune of life. That is the goal of our Federal Security Administration as set forth in several of its annual reports. More government regulation also faces us in peacetime price control and wage control and rent control and agricultural control, until, as in England, the government will tell every man how he must run his business, when he can expand or not expand, what machinery he can buy, and what wages he can pay. In agriculture the proposals would soon lead, as they have in England, to the government telling every farmer what he can raise and what he can't raise, how many beef cattle he can feed, how many dairy cattle he can keep, how many hogs and chickens he can raise.

What is the purpose of this vast expansion of government activity? Supposedly it is for the welfare of the man of low and middle income, but they have all this in England, and the British workman gets wages equal to about 40 per cent of what the American workman gets, and has less than half the standard of living. He is just as good a workman. His trouble is that there has not been in England, either in business or in government, or in labor, the freedom which has existed here.

Socialism draws a beautiful blueprint, but it utterly destroys the incentive of the individual manufacturer or the individual workman. In its effort for equality, it reduces everyone to the dead level of mediocrity. New ideas are discouraged. It moves toward its goal of complete equality, but the lower income American workman is better off than the average man in a socialist country. If we took everybody's income over 10 thousand dollars a year and distributed the excess to the other workers, there would be less than 2 per cent improvement in their wages; and that wouldn't last, because no one would go on working to earn over 10 thousand dollars a year if taxation was going to take it all. But a free system has resulted in a steady increase of productivity at the rate of 3 to 4 per cent every year, reflected in constantly increasing wages and standards of living. It is the low and middle income workers who profit most from liberty.

If socialism takes 40 per cent of the income of the country, in the long run it takes from 25 to 40 per cent of your income. Socialism is expensive. It causes tremendous taxation. A lot of those taxes are passed on into the cost of goods which you buy. Even the man of lowest income today already pays 20 per cent of his income in taxes, either directly or in the increased price of every article that he buys.

You are thus deprived of the liberty of spending the money that you have earned. The government spends it for you. If the present increase goes on, the time will come when the government takes 75 per cent of your income. Then you will be like the little boy in boarding school with some spending money in your pocket, but the government, like the school master, will tell you when to get up, what to eat, what to do and when to go to bed. It is just as easy to get complete socialism by more spending as it is by government directly taking over one business after another.

This whole danger has come upon us gradually. Each project is presented as something to improve somebody's condition without consideration of its effect on his freedom and that of others. The more powerful the government becomes, the stronger its propaganda in behalf of more power. The trend cannot be stopped, unless you are willing to elect both a President and a Congress who believe that the maintenance of liberty is the first and most essential consideration for progress.

But those who dwell on the importance of liberty must recognize the proper functions of government, and their case is weakened unless they recognize that there are necessary limitations even on liberty. What we seek is liberty for all the people, not for any special group. In a great complicated industrial community, liberty cannot become laissez faire. There cannot be a negative government action in its proper field or even some increase to meet new problems.

1. Government action may be necessary to maintain a limited liberty for all in our complicated modern life. We have more red and green lights at our corners to prevent confusion in traffic and other regulations so no one can hog the road. We have a Federal Communications Commission to prevent utter confusion on the air waves in radio and television. We have a Civil Aeronautics control because we desire safety in the air. But, in all of these necessary regulations, the important thing is that they be undertaken so as to preserve the utmost liberty possible in highway and air traffic, radio, television, and the like.

2. We have found that some government regulation is necessary if we are going to retain liberty itself in business. Thus, we found that without any government regulation, we were likely to have monopoly in many fields of business. Without the Sherman Act there would have been no freedom to go into, or stay in, business. Probably our industrial progress is due as much to protecting commercial freedom as any other factor. We see the vivid contrast in the stagnation of industry produced by the cartel system abroad. Thus, also, a free market is only possible if some protection is given against economic oppression and manipulation. We have enforced collective bargaining so that the fixing of wages may be on a truly free basis, as against the condition where an employer dealing with thousands of employees individually had an undue advantage in fixing wages. We also protect cooperatives in the farm field so that the individual farmer may not lose his economic freedom to obtain a fair price for his crops, because he is such a small unit dealing with a larger buyer or a market dominated by buyers. But in all of this legislation the important thing is to realize that the purpose is to protect liberty and a free price and wage determination for the greatest possible number of people, and not to carry out

some ideal economic control and direction of wages and prices and production conceived by a socialist planner.

3. Government certainly has the obligation in this country to relieve hardship and distress where private charity cannot do it. The advantage of our system is that it assures, roughly, a return in money measured by the work done and services performed, and thereby gives the incentive to do more and better work and more and better thinking. But under that system many must fall behind because of misfortune or their own lack of ability. Socialism claims that its advantage is in treating all equally. That is an ideal it has never attained, but it has destroyed incentive to improve. But the American people are charitable people, and they feel that this country is so productive that perhaps for the first time in history they can abolish hardship and distress from economic causes. Also our Constitution has as one of its ideals equality of opportunity, and the American people have come to feel that every child should have something like equality of opportunity no matter how poor the family or the community into which he may be born. Our state and local governments have always offered free primary and secondary school education in this country. They have undertaken to provide relief and old age assistance. They have given free medical care to those unable to pay for it. Practically every city has a general hospital for that purpose, and, while there may be gaps in service that could be closed, we do have throughout our country as good medical care available for the unfortunate as any country in the world. Our local governments, with federal aid, have undertaken to provide free housing for those unable to pay enough rent for decent private houses.

I quite agree that when you get in this field on an extensive basis you have to be careful not to go on to socialistic service for all. In fact in free schools and in the old age and survivors insurance system we have taken two steps into socialism; but I do not think that term can be applied to the charitable effort to remove extreme hardship and distress.

If we don't want charity to develop into socialism, however, there are certain definite rules to be followed. First, there must be state and local control, and the service must under no circumstance be federalized. I do not think you can maintain freedom in a country of our size in any field ruled by federal bureaus. They are too far from the people. They are so far from the people that they can't determine who is in need and who isn't, as we saw in W. P. A. days, and their policy becomes one of hand-outs for all. They are in no way responsive to public opinion. They make no allowances for the local differences of physical condition or custom or taste. The federal government may reasonably furnish advice and research. In clear cases of need, it may furnish assistance, but it should never control or regulate. For this reason, if there is any federal aid, it must be dispensed on definite statutory rules, with minimum discretion in federal officials. We have found that, if such discretion is given, it leads to an effort to withhold money until the state or locality complies with the ideas of some Washington bureaucrat has to how the service must be conducted.

State and local government services seeking federal aid must not only be confined to those in real need, but the standard of need must be a minimum one which does not make the recipient of government money better off than the man who works for a living. After all, to the extent that government supports those who are not working or not carrying their share of the burden, it can only do so by imposing more taxes on all the people who are working. It is an illusion to think that you can get this money out of corporations or the rich. If you confiscated all income over 10 thousand dollars a year per person, you would get 3 billion dollars more than today. Socialized medicine alone will cost from 6 to 10 billion minimum. The way costs are going today, it might even reach 18 or 20 billion. We cannot impose on the hard-working people of this country a burden so great to support the nonworkers that it reduces their incentive and their standards of living.

With the tremendous military spending we now face, I doubt if we should undertake any additional program, no matter how meritorious. My own feeling is that we endanger the whole economy of this country if we permit the total tax burden to run over 25 per cent of the income of all the people. Where it has reached 40 per cent, there is no longer any incentive for private development, and little doubt that socialism will continue to spiral upwards.

But whatever government project may be justified, it is vital that those who enact it, and those who administer it, have constantly before their eyes the maintenance of the greatest possible liberty for the greatest number of people. The justification for any government action must be clear and beyond question. The New Deal and Fair Deal rulers of this country have been deterred by no such considerations. They have been inspired by the philosophy that only the government can solve the problems of the people. Only the government has the ability to design beautiful economic plans. Only the government or they themselves who run the government have the expert knowledge to know what is good for the people. If any problem arises, they have only one solution—create a new government board and give it all the power and money it asks for to find the solution. From their standpoint there is no limit to the spending by government. The taxpayer is inexhaustible. In fact they favor spending for spending's sake and for the inflation they hope to produce. They are determined to centralize all power in Washington. They have a basic contempt for the people's views and the views of local communities. They are the experts, and they propose to impose their false utopias on the people whether they like them or not. They ask for power unlimited by law, and if limitations are imposed they do not hesitate to evade them and treat Congress with contempt—at least until a major investigation is undertaken. There can be no doubt that if the present trend continues, there is no end until the nation sinks under the weight of a crushing bureaucracy with the tremendous taxation and limitation of freedom which it requires.

If we can preserve liberty in all its essentials, there is no limit to the future of the American people. There are no frontiers to human improvement. The progress that America has made can be an example for the entire world to follow, while we go on still further to open new opportunities for all mankind. But we cannot do it under the leadership of today, or under the creeping philosophy of socialism which has even affected your thinking and mine more than it should. I am always inspired when I consider again the wisdom of the founders of this nation, and astonished to see their clear analysis of the necessary principles of freedom, and of justice and equality incident to such freedom. May our leaders be inspired by those ideals, and seek progress by applying them to the new conditions of a world which physically has changed, but a world where the principles of human liberty are eternal.

ANNOUNCER: You have just heard Senator Robert A. Taft, speaking before a meeting of the House of Delegates of the American Medical Association in Los Angeles. In just a few minutes you will hear the second noted speaker of this meeting —a Democrat, Senator Harry F. Byrd. We pause now for station identification.

We are back in Los Angeles, where Dr. John W. Cline, President of the American Medical Association, is about to introduce Senator Byrd. The next voice you hear will be that of Dr. Cline.

DR. CLINE: Thank you, Senator Taft, for that excellent presentation of your views on the major issues in America today. The doctors of this country are deeply grateful to you, as are millions of other citizens in all fields of endeavor, for your courageous fight for American principles. And now, what will our next speaker, as a distinguished representative of the Democratic Party, have to say? Will he agree or will he differ with the Republican speaker? Will their opinions conflict, or will they coincide on the fundamental questions confronting our country? We soon shall hear.

Our second speaker—a successful farmer, fruit grower, newspaper publisher, and public servant—is a life-long Democrat from the traditionally Democratic state of Virginia. He began his public career with 10 years of service as a state senator and was a leader in establishing Virginia's highway system. For three years he was chairman of his state Democratic Committee, and for another four years he was governor of the great state of Virginia. He was for 12 years the Democratic national committeeman from his home state. In 1933, he was appointed to fill an unexpired term as United States Senator, and then successively, in 1934, 1940, and 1946, he was elected and re-elected for three full terms in the Senate.

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He has gained nation-wide recognition and honor as a fighting apostle of economy, efficiency, and integrity in government. He believes, with all his heart, in the American way of life, and he repeatedly has warned that this country can be taxed into state socialism, even more easily than it can be legislated into that status. He has not indicated that he is a candidate for the Democratic nomination for President, nor has he campaigned for that high office. It is an index of the esteem in which he is held by the American people, however, that in a recent poll of nonmetropolitan newspaper publishers, on the question: "Whom do you believe to be best qualified for the Presidential nomination by the Democratic Party," he ranked only two votes short of first place in this nation-wide survey.

Ladies and Gentlemen, I now have the pleasure of introducing the senior Senator from Virginia, the Honorable Harry F. Byrd.

SENATOR BYRD: It is a privilege to address the American Medical Association. I am very happy to be in California and in this great city. I have a high respect and friendship for your two Senators, Knowland and Nixon. They are able, patriotic and influential. As a Democrat to two Republican colleagues, I am glad to pay this tribute. I am told that the rules of this meeting prohibit a "partisan" approach. I submit that I can qualify as a nonpartisan, and my record proves it.

Even I, a Democrat from Virginia, have been charged, in these days of stress, with voting with the Republicans. We have many statisticians in the government at Washington. How they employ their time, I do not know, but they get out reports every now and then, and frequently on the Senators. They say that I voted 66% with the Republicans and 34% with the Democrats. My answer to that is this: My name begins with a "B." As the roll is called alphabetically, I vote first, and the Republicans vote with me.

I can say with all sincerity that when these great legislative issues come before the Senate of the United States, the test I apply is not whether they are of Democratic origin, or of Republican origin, but whether they are best for the United States of America. I make no apologies for standing shoulder to shoulder with that Republican leader, Senator Taft, when the effort was made to repeal the Taft-Hartley Act. I believe the repeal of that Act, demanded by President Truman in order to pay a debt he had assumed in the campaign of 1948, would have been the green light to labor leaders to do what they pleased in this country—stop our trains, stop our mines, stop the very necessities of our existence—unless we yielded to their demands.

It was not entirely the question of the language and the contents of the Taft-Hartley Act. The issue was whether certain labor leaders were to be permitted to force the repeal of a law that had been passed overwhelmingly by the Congress of the United States. And, I am proud of the fact that I was one of sixteen Southern Democratic Senators who voted with the Republicans. This act remains on the statute books because of the willingness of the Southern Democrats to place country above party. We Southerners are sometimes criticized, but every now and then we perform a useful purpose. I think we did in that instance.

What kind of a Democrat am I? I am a Jeffersonian Democrat of the old school who believes that simple honesty is still the very foundation of human character. I am an antisocialist Democrat, which means, in plain language, I am *not* a Truman Democrat.

The essence of freedom, under our American democracy, lies in our system of checks and balances. Within the federal government, checks and balances are provided through a three-branch system—the executive, the legislative and the judicial. Beyond this, still other checks and balances are provided in our system of state and local governments, which lie closest to individual citizens from whom all governmental power and authority is derived. Our democracy has been given vitality by our system of competitive free enterprise, which, to this point, has made us, through individual initiative, the greatest nation on earth. I stand for this system, with the absolute minimum of governmental shackles. Our four foundation stones are freedom of religion, freedom of speech, freedom of the press and last but not least freedom of opportunity to the individual under the competitive enterprise system.

Many are warning us as to what may come unless we change our governmental course. Some call the present trend collectivism, some call it statism, and some call it the welfare state, but let us not be technical as to the name of this new "ism." I would call it "ruinism" because these new policies of government will destroy the free enterprise system. America today stands at the crossroads. We can continue down the road to state socialism and ultimate disaster, or we can strengthen and revitalize the free enterprise system which has given to us our freedoms, and then go forward to a nobler and greater destiny. There are those who believe that socialism can be turned on and off as if it were water flowing through a spigot, and there are those who profess to believe we can have a little socialism and remain free.

For those who think "a little socialism" is a good thing, there is the British example. From what we have seen in England, we would be the most stupid nation on earth if we allowed ourselves to become further embraced by the socialism which has been creeping upon us for too many years. Socialism and free enterprise cannot live under the same roof. England thought they could, but, to her sorrow, she has found it is impossible. She socialized the coal mines, and the production of coal immediately declined. For the first time in her history, England is importing coal. She socialized the steel industry, and the production of steel immediately declined. She socialized civilian aviation, the electric supply industry, the Bank of England, the inland transportation system, the gas industry, and many other functions and enterprises essential to the welfare of her people, including socialized medicine, agriculture and the legal profession.

A friend recently sent me a copy of the London *Times*. On the first page it had a list of 150 farmers whom the government had charged were guilty of bad husbandry, because they had not obeyed the government bureau on what to plant, when to plant, and when to harvest. This notice said that unless these farmers mended their ways their farms would be confiscated. Not paid for, not condemned, but confiscated, in the free land of England! For a thousand years England has boasted that the Englishman's home is his castle, and now under socialism our friends across the sea have reached such a low estate that if a farmer does not obey the order of a bureaucrat, he is subject to the penalty of having his property confiscated.

In England there are only 70 Britons who have an income of $16,800 or more, after taxes. The rich have been liquidated. But to liquidate the middle classes, you strike at the heart and core of any country. This England has been gradually doing, as there are only 320,000 Englishmen now who have incomes of from $2,800 to $5,600 or more a year, after taxes.

In the face of these facts, are we going the road of England? Just recently, England, with momentous effort, decided to attempt the road back. By direct vote, she ousted the socialistic Labor Party and installed Winston Churchill, who I think is the greatest man of his generation, and to whom England has so often turned in her days of peril. But I fear there is little reason to expect that even under this great leadership England can return to the free enterprise system. England has repented and all of us wish her well, as she is our friend and ally.

As I see it, the welfare state, about which we have been hearing so much in recent years, is that state of twilight in which the glow of democratic freedoms is fading beyond the horizon, leaving us to be swallowed in the blackness of socialism, or worse.

In many federal programs we are chasing a mirage of easy money in the form of deficit dollars. Some of us have been duped into believing that the easy dollars handed out by the federal government are something for nothing. But, actually, these programs are adding to the public debt, undermining the will of individuals, regimenting the production of agriculture and labor, controlling the practices of business, curtailing the solvency of states, and destroying the self-determination privileges which are traditional in our local governments and domestic customs.

Make no mistake—it is socialism which lies at the end of this rainbow, and, in this rainbow, the predominating color is the red of federal deficit spending under which a whole new generation of Americans has grown and developed. As to where we stand today, the last time the socialist party in the United States campaigned actively in a presidential election was in 1932.

Today, virtually every plank in that 1932 socialistic platform has been enacted into federal law, and, in some cases, enlarged upon. For this reason I assume the Socialist Party as such has not been active since they have gained their objectives. Read this platform and you will see.

This is not a brash opinion of my own. Let us call to the witness stand Earl Browder, former leader of the Communist Party in America, and an authority on communism and socialism, who recently listed 22 socializing items adopted by the federal government ranging through deficit financing, price controls, government housing, and "full employment" laws. These 22 items, he said, expressed "the growth of state capitalism . . . an essential feature of the confirmation of the Marxist theory. . . . It represents the maturing of the objective prerequisites for socialism, the basic factor which makes socialism inevitable."

Mr. Browder further said: "Socialism has progressed farther in America than in Great Britain under the Labor Government, despite its nationalization of certain industries, which is a formal state not yet reached in America."

Adoption of the Truman Fair Deal program, as he has outlined it . . . and recently reaffirmed it . . . would irrevocably put us on a one-way street to state socialism. Mr. Truman says it is an insult to the intelligence of the American people to say this country is on the road to socialism. I submit that it is an insult to our intelligence to assume that we do not realize that adoption of the President's program will commit us irrevocably to a socialistic state, from which there can be no retreat.

If the President is against socialism, I ask him to answer these questions: Why does he continue to pressurize Congress to adopt socialized medicine? He sent Oscar Ewing, at public expense, to England to get the "low-down" on their socialistic system for propaganda use in the United States. If the President does not recognize that the British experiment in medicine is socialism, he could inform himself from the debates in England during the last election. The President calls his plan national health insurance, but it is socialized medicine just the same.

The cost of socialized medicine in America is difficult to estimate. We do things on a very grandiose scale when it comes to spending money, as you know. If the federal government undertakes to pay the expenses of our children when they are born, guard them through their lives from illness and the things that may happen to them, and then bury them, the cost will be huge. Some of the statisticians have estimated the ultimate cost at 20 billion dollars annually, and in 50 years, that amounts to a trillion dollars.

These statisticians further said that if you take a trillion dollars and pile one dollar on top of another, it would extend 2,096,000 miles high—seven times the distance to the moon—with enough left over to pay our present national debt. I am told that is accurate, but I have not checked it.

If the President is against socialism, why is he advocating the Brannan plan, which inevitably means socialized agriculture? This plan not only would contribute in a huge way to the bankruptcy of America, but would create such chaos in the production, sale and distribution of food as to make it necessary for the government to take over these functions that must remain competitive in private hands. President Truman and Secretary Brannan are now conducting a nation-wide campaign to force the Brannan plan through Congress, notwithstanding the fact that the great farm organizations such as the American Farm Bureau Federation and the National Grange, as well as most of the farmers of this country, are bitterly opposed to this plan. They realize it will be the end of free enterprise in agriculture.

The only sincere thing Mr. Brannan has said about the plan is that he could not estimate the cost of it. Testifying before a committee of Congress, he gave this glowing picture of what the Brannan plan would do—reduce the cost of food to the consumer, pay the farmers a high profit for what they produce—but he did not fill in the gap by telling how the federal government could obtain the vast sums necessary to pay for the difference between food at low cost to the consumer and high prices to the farmer.

If President Truman is opposed to socialism, why is he advocating another extension of socialized housing?"

These three proposals alone would mean socialization of your health, your food, and the roof over your head. But this is not all. If the President is opposed to socialism, why is he constantly advocating an extension of the number of those who receive payments from the Treasury of the United States? Today, there are 17 million Americans receiving regular payments directly from the federal government, and 8 million more are on the rolls of counties, cities and states. These 25 million, with their families, constitute a substantial part of our population.

Socialism can be effectively promoted by constantly increasing those who are on the public payroll. A population of government dependents is a socialized population.

Among the cardinal characteristics of socialism are government subsidies with controls, and government dole with regimentation. I am against that.

The American system, operating in the fullest freedom of democracy, stimulates individual initiative to the development and production of more of what we need, in peace or war, at a cost we can more easily afford from the earnings of our endeavor. I am for that.

The American Medical Association needs no definition of the free enterprise system from me. It is the system which, in the relatively short span of 160 years, has brought us from the impotency of 13 un-united colonies to our present position of world leadership. I do not concede that it should be scrapped for socialism in welfare state clothing, which never brought greatness, happiness or security to any nation.

The American system has developed individual freedoms under constitutional democracy to the fullest measure ever known to man. It is the system which is always ready to supply the vital spark needed by the deserving to explode mediocrity into genius. It is the system which supplies the incentive for those at the bottom to rise to the top.

It is the system, which enables us with only 6 per cent of the world's population to outproduce the rest of the world combined. It is the system which produces steel, the prime requirement for military defense, at a rate of three tons for every one produced by the rest of the world—at a rate of more than four tons to every one ton produced by Russia.

I challenge the socialists to produce a practical substitute for the free enterprise system's capacity to hold Russian world aggression at bay. Our free enterprise system is a greater deterrent to Russian agression than the United Nations ever will be. It is this system which is our first line of defense. Armies, navies, and air forces are merely the tools through which the strength of this system is applied in war. With our eyes wide open, will we yield to the ever-increasing socialization of those freedoms and institutions which are vital to our democratic free enterprise?

With respect to the checks and balances against federal zealots provided in our system of state and local governments, there is pending in Congress now legislation under which the federal government would usurp local police power and state control of elections.

With respect to checks and balances between the executive branch and the Congress, the Honorable Roswell P. Magill, former Under Secretary of the Treasury, now President of the Tax Foundation, recently testified that despite the constitutional mandate that federal expenditures be controlled by Congress, "Congress does not have that kind of control today." It has been chipped away insidiously over the past 20 years by give-away program after give-away program which have committed the federal Treasury without annual review by Congress.

From George Washington's administration to April, 1945, including the Roosevelt administration, the federal government took in taxes from the American people 248 billion dollars. In six years and two months, from May, 1945, when Mr. Truman took office, to June, 1951, the federal government took from us 255 billion dollars.

In plain words, in less than six and one-half years, including only three months of world War II, Mr. Truman has taken from the people in the form of federal taxes 7 billion dollars more than was paid into the Treasury in the previous 156 years of our existence as a nation. This is the record of Mr. Truman, the tax collector. Now let us look at the record of Mr. Truman, the spendthrift. From the administration of George Washington to

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the beginning of World War II, federal expenditures totaled 179 billion dollars. From the end of World War II, in six years under Mr. Truman, the federal expenditures totaled 260 billion dollars, or 81 billion dollars more than in the entire life of our nation, excepting the three and a half year period of World War II. When I first compiled these figures they appeared so fantastic that I had them checked from the official Treasury statements to prove their accuracy. The figures are correct.

In fiscal 1953 the Budget Bureau estimates the federal expenditures at 85 to 90 billion dollars. If so, Mr. Truman will spend in one year—the year beginning July 1, 1952—more than one-half as much as all previous presidents spent up to World War II.

It is alarming to note that in only one year in our history have we exceeded this estimated 1953 fiscal year spending. In fiscal 1945, at peak of World War II, we spent 98 billion. Then we were financing the greatest war in history. Now we are engaged in a police action in Korea. How much farther can we go in this reckless financial irresponsibility?

Now for a "Byrd's"-eye view of the federal budget. Based upon the Budget Bureau estimate of spending for fiscal 1953, the deficit will be from 17 to 20 billions in one year, as the income from federal taxation in this year under present tax rates will be 68 billion dollars to 70 billion dollars. In addition, our local and state taxation will be about 19 billion dollars.

Americans are paying nearly 30 per cent of the national income in taxes. Our taxes have reached the confiscatory stage, which means that new taxes will probably result in diminishing returns.

In the circumstances, it is natural to ponder the question: When does a nation become insolvent? In a system such as ours, when and how does national insolvency manifest itself? There probably will be no milestone to mark the cross road, but it seems to me that a democracy is approaching insolvency when: (1) we are unable to pay current costs of government over a prolonged period with taxes short of confiscation and diminishing returns, and, (2) the constant cheapening of the dollar is a result of government operations. If these are the symptoms, it would appear that the diagnosis of our present and prospective fiscal situation is unmistakably clear. The thing that is most inflated in America today is the federal government. Big government costs big money. Inflation is conceived and born in Washington. Only the federal government can spend in unlimited amounts. It alone determines the value of money and the extent of credit, because it alone is legally empowered to do so. A federal bond is a first mortgage on all the property owned by every American citizen.

The reckless spending of the Truman administration has precipitated a federal fiscal crisis which many of us may not fully realize, but, unless we retrench, we can anticipate a constant deterioration of our currency and credit. There is only one road to solvency, and that is to stop spending money we do not have by elimination of every nonessential disbursement. Yet, every effort by Congress to retrench is vigorously opposed by the President and his cohorts. There is, in my opinion, only one untouchable item in the budget of the federal government, and that is the interest on the public debt. This we must pay as a matter of honor and to preserve the value of our bonds.

The one overshadowing characteristic of the administration now in Washington is fiscal weakness and irresponsibility. From this springs the demand for confiscatory taxes, stifling controls and centralization. If American democracy is destroyed, it will be the result of fiscal irresponsibility of which the present administration is guilty, and which, even now, is being exploited by political camp followers who would centralize all power and purse control in Washington. From these come a deadly assault on the free enterprise system, the creeping socialism and the scandals which Thomas Jefferson foresaw when he said, "I do verily believe that a consolidated government would become the most corrupt government on earth."

As I witness the moral deterioration of our government at Washington which has shocked and stunned the American people, once again I pay tribute to the foresight and wisdom of Thomas Jefferson, the founder of the legitimate democratic party.

I do not concede that either democracy or free enterprise, or any other American freedom has run the course of its usefulness in the world. They have been worth fighting for in the past against both economic and military challenge, and I do not concede that they were any dearer to those who have fought and won before than they are to us today. The battle lines are drawn. I am ready to fight. I hope you are. The forces of freedom in America need recruits.

What can we do? What can you do? I am frequently asked that question. I would say, first, that you must stand firmly against socialistic trends, because a little socialism inevitably means more and more socialism. There are many doors to the house of socialism. It is very easy to get in but very hard to get out. Let us not be misled into socialism by the back door. Let us judge for ourselves where these new "isms" will lead us and not be deluded by those who pay lip service to free enterprise and then advocate those things that would destroy it.

The American Medical Association has waged a clean—aboveboard—effective campaign against socialized medicine. You are fighting to preserve the great principles of our republic. You realize, as all of us should, that socializing an important segment of our daily life means that sooner or later further socialism will encompass other activities, resulting in a complete socialistic regime.

Do not be deluded into a sense of false security. Those who insist upon committing this country to socialism are ever on the alert. Today in the Senate of the United States there are few votes for socialized medicine. But when the slightest opportunity opens you will find those promoting these measures, ready to strike, like a snake in the dark. If Mr. Truman is reelected on this platform of state socialism he will assert that he has a mandate from the people to enact this full program into law.

Then I would say that you, the people of America, the voters at the polls, must demand that short of total war our federal budget must be balanced. I do not ask for "pet" federal appropriations but demand that the President and the Congress keep the federal spending within the ability of the people to pay. Let us all recognize that we cannot pyramid deficit after deficit on an existing federal debt of 260 billion dollars and survive as a democracy.

Once the American dollar goes down, we will enter an age of international darkness. The American dollar is the only thing today that is holding the world together. It is the only currency that everybody, everywhere in the world, has confidence in.

Those who, wilfully or otherwise, would destroy the American system of free enterprise would destroy the freedoms of people everywhere. Today, we alone are bearing the standard. Without its light, freedom and progress would perish from the earth. We must not fail.

Without American solvency there would be no deterrent to communism abroad. In the existing circumstances it is no exaggeration to say that there is literally nothing on earth more important than the preservation of the fiscal integrity of the federal government of the United States and of the financial stability of the free enterprise system.

In conclusion, let me say, we should always remember that human freedom is not a gift to man; it is an achievement by man, and, as it was gained by vigilance and struggle, so it may be lost by indifference and supineness.

DR. CLINE: Thank you, Senator Byrd, for your splendid presentation in this nonpartisan discussion of the critical issues of 1952. Virginia has contributed much to the building of our America, and in this era, Senator Byrd, one of its finest contributions has been your presence in the United States Senate as a vigilant watchman and defender of American liberty.

On behalf of the American Medical Association, I wish to thank both Senator Taft, Republican, and Senator Byrd, Democrat, for taking part in this forum designed to help clarify the major public issues before the American people today.

ANNOUNCER: You have just heard Dr. John W. Cline, President of the American Medical Association, bring to a close an historic meeting of the House of Delegates of the A. M. A., a highlight of the Association's Fifth Annual Clinical Session here in Los Angeles. Dr. F. F. Borzell, Speaker of the House, also was heard on this program, which featured addresses by the Honorable Robert A. Taft, senior Senator from Ohio, and the Honorable Harry F. Byrd, senior Senator from Virginia.

TELEVISION IN HEALTH EDUCATION

The American Medical Association Clinic on Television in Health Education, held in New York, October 16, was attended by about 200 representatives of networks, advertising agencies, health and medical organizations, ethical drug houses, universities, school systems, and other groups interested in reaching a mass audience through this medium. Representatives of state medical societies from New York, Connecticut, Massachusetts, Ohio, New Jersey, and Minnesota were in attendance. The following county societies were represented: Harris County Medical Association, Houston, Texas; Medical Society of County of Kings, Brooklyn, N. Y.; Medical Society of County of New York; Nassau County Medical Society, Mineola, N. Y.; and Maricopa County Medical Society, Phoenix, Arizona.

The day was devoted to exploration of the problems involved in use of television as a device in health education of the public. The leadership furnished by experienced speakers and members of panels made it possible to furnish specific answers to many questions ranging all the way from audience measurement, through techniques, and the problems of cost.

Dr. W. W. Bauer, Director, Bureau of Health Education of the American Medical Association, supervised the planning of the Clinic and acted as general chairman of the meeting. The keynote address was presented by Dr. Louis H. Bauer, President-Elect of the American Medical Association. In emphasizing the obligation of the A. M. A. in educating the public to preventive medicine, Dr. Bauer pointed out that this responsibility rested not only on medical and allied professions, but also on radio and TV networks and stations in assisting the Association to realize their objectives in better health education.

Dr. Thomas Coffin, Supervisor of Program Research Division, National Broadcasting Company Television Network, presented the relationship between television advertising and sales results based on the Hofstra studies.

Mr. Ted Cott, general manager, WNBC-WNBT, New York, urged that public service agencies use the techniques of the commercial broadcaster trying to sell a product in setting themselves the task of selling their audience health education.

Mr. Leo Brown, Director of Public Relations, American Medical Association, stressed the need for joint responsibility among medical groups, voluntary agencies, governmental agencies, and the television industry in making authentic health information available to the public.

Roy K. Marshall, who discussed "Listeners' Reactions," declared that the public does want to be informed. "This is amply demonstrated by every discussion program which has ever been on the air."

The session continued at luncheon, when Sam Silverman, New York cab driver, reported on his six-week survey conducted among his passengers regarding their viewing of health education telecasts. The report pointed out the necessity for more and better health information, requested by many passengers. It also showed the need for helping the lay audience distinguish between commercial information and authentic health guidance.

Ralph Creer, Director, Committee on Medical Motion Pictures, A. M. A, presented kinescopes as graphic demonstration of the great potentialities of TV as a means of awakening people to the dangers and proper methods of cure and prevention in disease.

Seymour Siegel, director, WNYC, New York, led the discussion in the afternoon. Panel members included Erik Barnouw, editor, Communication Materials Center, Columbia University Press; Ralph Foster, chief, Films and Television Section, Department of Public Information, United Nations; Dr. Claude-Starr Wright, assistant professor of medicine, Department of Medicine, Ohio State University; Dr. George Wheatley, third vice-president, Health and Welfare, Metropolitan Life Insurance Company; James Macandrew, director, Board of Education Station WNYE, New York City; Gerald W. Tasker, research director, Cunningham & Walsh, Inc.; and William Vance, TV Production Staff, McCann-Erickson, Inc.

MEDICAL DEFENSE MEETING

The two-day Medical Civil Defense Conference sponsored by the American Medical Association, the American Hospital Association, and the Association of State and Territorial Health Officers at the Palmer House in Chicago Nov. 9-10 drew an attendance of 250, the largest crowd ever to attend a medical meeting of this kind. Dr. James C. Sargent, Milwaukee, chairman of the A. M. A. Council on National Emergency Medical Service, which initiated the meeting, said, "its success is a real inspiration to all of us in exerting a greater effort for the big job ahead."

Conference delegates passed unanimously a resolution, introduced by Dr. Perrin H. Long of New York, calling for all medical personnel to be "assigned to their proper places in the local civil defense organization; their assignment to be the responsibility of the legally authorized civil defense officers according to the laws in the various states, and only after full consultation with the local, state and/or national professional health organizations which exist in the various fields." The resolution said further that "the professional and tactical organization and training of individuals and units will be the prime responsibility of legally authorized civil defense officers, again, only after full consultation with local, state and/or national professional health organizations in these fields."

There were many speakers on the two-day program, including Millard F. Caldwell, administrator, Federal Civil Defense Administration, and Dr. William L. Wilson, assistant administrator, Health and Welfare, Federal Civil Defense Administration. C. Joseph Stetler, Secretary of the Council, said that one point that stood out after the many speeches was that of the absolute necessity of coordination between health and welfare planning in developing a well-rounded program of disaster relief. Dr. Norvin C. Kiefer, director of Health and Special Weapons, Defense Division, said afterward that he hoped the conference would prove an inspiration for genuine nationwide cooperation between the health officer, the hospital, and the medical and allied health personnel—of all categories—in the civil defense movement. He stressed one other point: that the necessity for mobile support, to be fully met, must depend upon health personnel in the remote areas, not in the target areas.

An afternoon panel gave an excellent close-up view of the Federal Civil Defense Administration's operations in the various fields. "If there was one central theme," Dr. Sargent said later, "it seemed to be that now since the preliminary phases of planning, financing and procedure have passed, it is high time to make a positive and concerted effort at recruitment of the hundreds of thousands of American citizens necessary to carry out this gigantic program."

RESIGNATION OF DR. KELLOGG SPEED

The Committee on Scientific Exhibit of the Board of Trustees has accepted the resignation of Dr. Kellogg Speed, Chicago, as Chairman of the Special Exhibit Committee on Fractures, effective at the close of the Los Angeles Session. Dr. Speed has been chairman of this Committee for 25 years, first being appointed in 1926. In addition to the demonstrations on the treatment of fractures at the Annual and Clinical Sessions of the American Medical Association, he has been largely responsible for the "Primer on Fractures," now in its sixth edition.

Dr. Frederick A. Jostes, St. Louis, has been appointed Chairman to succeed Dr. Speed. The other members of the Committee are Dr. Gordon M. Morrison, Boston; Dr. Ralph G. Carothers, Cincinnati, newly appointed. Dr. Kellogg Speed becomes emeritus member.

PRESIDENT-ELECT VISITS AIR BASE

Dr. Louis H. Bauer, President-Elect of the American Medical Association and consultant to the Air Force Surgeon General, visited Langley Air Force Base last month to obtain first-hand observation of local problems in aviation medicine prior to the consultants conference held by the Surgeon General.

With the 47th Medical Group acting as host, Dr. Bauer toured base headquarters, flew aloft in a B-45, and checked other medical aspects of Air Force work. Dr. Bauer was the first commandant of the School of Aviation Medicine and is editor of the *Journal of Aviation Medicine.*

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TWELFTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Hotel William Penn, Pittsburgh

Jan. 18-19, 1952

PRELIMINARY PROGRAM

Sponsored by
The Council on Industrial Health of the A. M. A.
Medical Society of the State of Pennsylvania
Allegheny County Medical Society

FRIDAY MORNING, 9:00—FORT DUQUESNE ROOM

REGISTRATION

FRIDAY MORNING, 10:00—URBAN ROOM

OPENING SESSION

ANTHONY J. LANZA, M.D., *Presiding*
Chairman, Council on Industrial Health;
Chairman, Institute of Industrial Medicine, New York University-Bellevue Medical Center, New York

To be Announced

To be Announced

Industrial Health is Industrial Strength
HOWARD A. RUSK, M.D., D.Sc. (Hon.); Professor and Chairman, Department of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center; Associate Editor, The New York Times; Chairman, Health Resources Advisory Committee, Office of Defense Mobilization, New York.

PANEL ON PERIODIC HEALTH EXAMINATIONS

FRANK M. JONES, M.D., *Presiding*
President, American Academy of Occupational Medicine, Montreal

Participants:
FREDERICK H. SHILLITO, M.D., Director, Atlantic Division, Pan American World Airways System, New York
LEMUEL C. MCGEE, M.D., Hercules Powder Company, Inc., Wilmington, Delaware
BENJAMIN V. WHITE, M.D., Hartford, Connecticut

FRIDAY AFTERNOON, 2:00—URBAN ROOM

JAMES H. STERNER, M.D., *Presiding*
Medical Director, Eastman Kodak Company
Rochester, New York

Clinical Pulmonary Physiology
HURLEY L. MOTLEY, M.D., Director, Cardio-Respiratory Laboratory, Jefferson Medical College Hospital, Philadelphia

Evaluating the Effect of Industrial Noise on Man
HORACE O. PARRACK, Major, USAF; Chief, Bio Acoustic Unit, Wright Air Development Center, Wright-Patterson Air Force Base, Dayton, Ohio

Eye Health Evaluation and Maintenance
ARTHUR K. PETERSON, M.D., Medical Director, The Lakeside Press, R. R. Donnelley & Sons Company, Chicago
A. D. RUEDEMANN, M.D., Detroit

FRIDAY EVENING, 6:30—BALLROOM

ANNUAL DINNER

ANTHONY J. LANZA, M.D., *Presiding*

Health for the American Worker—A Joint Responsibility
Speakers to be Announced.

SATURDAY MORNING, 9:30—URBAN ROOM

OCCUPATION HOUSEWIFE

Jointly sponsored by the Council on Industrial Health and the Woman's Auxiliary, American Medical Association

MELVIN N. NEWQUIST, M.D., *Presiding*
Medical Director, The Texas Company, New York

Keynote Presentation
LILLIAN M. GILBRETH, Dr. Eng., Consulting Engineer, Montclair, New Jersey

Women in Our National Work Force
FRIEDA S. MILLER, Director, Women's Bureau, U. S. Department of Labor, Washington, D. C.

What Happens When the Homemaker Goes to Work?
ELIZABETH SWEENEY HERBERT, Household Equipment Editor, McCall's Magazine, New York

Housekeeping—A Dangerous Trade?
THOMAS FANSLER, Director, Home Safety Division, National Safety Council, Chicago

Energy Saving Procedures for the Disabled Housewife
The Disabled Cardiac Person
JOHN G. BIELAWSKI, M.D., Executive Director, Michigan Heart Association, Detroit

The Orthopedically Disabled Person
EDITH L. KRISTELLER, M.D., Director, Disabled Homemakers Research Project, New York University-Bellevue Medical Center, New York

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SATURDAY NOON, 12:00—BALLROOM

LUNCHEON

Sponsored by the American Association of Industrial Nurses (Pittsburgh Chapter)

SATURDAY AFTERNOON, 2:00—URBAN ROOM

OCCUPATION HOUSEWIFE
(CONTINUED)

MRS. HAROLD F. WAHLQUIST, *Presiding*
President, Woman's Auxiliary to the American Medical Association, Minneapolis

Further Discussion of the Disabled Housewife
JULIA S. JUDSON, M.S., P.T.A., Coordinator, Disabled Homemakers Research Project, New York University-Bellevue Medical Center, New York

Survey for the Evaluation of Clinical Instruction on Work Simplification for Cardiac Patients
MARGARET AUSTIN, M.D., Chicago Heart Association; Chief Cardiologist, Women and Children's Hospital, Chicago

The Home Economist Adapts Work Simplification Course to Meet the Needs of the Cardiac Homemaker or Housewife
FRANCES G. SANDERSON, Professor of Home Economics, Chairman of Home Economics Department, Wayne University, Detroit

Question and Answer Period for Audience Participation

SATURDAY AFTERNOON, 2:00

HUMAN RELATIONS AND MENTAL HEALTH IN INDUSTRY

Discussion Program to be Announced.

Speakers to be Announced.

MEDICAL NEWS

ARIZONA

Service Award for Southwestern Physician.—Dr. W. Warner Watkins of Phoenix was honored at the annual banquet of the Southwestern Medical Association in October with a citation for 30 years of service. Dr. Watkins, who was editor of *Southwestern Medicine* for 12 years, served as secretary-treasurer of the association for 10 years and as president in 1920. He was presented a lifetime membership in the association.

CALIFORNIA

Chemical Society Anniversary Awards.—Professor Linus C. Pauling of the California Institute of Technology and Professor Choh H. Li of the University of California received two new medal awards inaugurated by the American Chemical Society's California Section in observance of the section's golden anniversary. Presentation of the medals was made November 27 at a dinner in Berkeley. Professor Pauling, a former president of the American Chemical Society, was awarded the Gilbert Newton Lewis Medal for his major contributions to chemical theory. He is internationally known for his research on the structure of crystals and molecules and on the nature of the chemical bonds that hold atoms together. The medal honors a University of California professor who was an outstanding authority on chemical thermodynamics. Not given on an annual basis, the medal will be presented only as the occasion warrants and only to North Americans. Professor Li received the California Section Medal for isolating corticotropin (ACTH) in 1942 and subsequent work on the hormone. He is presently professor in the department of biochemistry. This award will be given annually to a scientist under 40 years of age who has made a major contribution to chemistry while living in one of the 11 western states.

CONNECTICUT

Yale Receives Blake Portrait.—A portrait of Dr. Francis G. Blake, Sterling Professor of Medicine and former dean of the Yale University School of Medicine, New Haven, was formally presented to Yale University November 25 at a brief ceremony in the club room of the Sterling Hall of Medicine. The portrait was a gift of over 400 former colleagues, students, friends, and members of the medical school staff. This year Dr. Blake is retiring after completion of his 30th year of service at Yale to serve with the medical research and development program for the United States armed forces in Washington, D. C. An authority on chemotherapy, Dr. Blake did research on many epidemic diseases, including pneumonia, measles, scarlet fever, and typhus. In 1921 he joined Yale University School of Medicine faculty as a professor of medicine and one of the youngest men ever appointed to a full professorship at Yale. In 1940 he became dean of the school of medicine, a position he held for seven years. During this period he held a number of important government positions and served as president of the Army Epidemiological Board.

ILLINOIS

Grants-in-Aid of Cancer Research.—The American Cancer Society, Illinois Division, Inc., has received $20,000 from the estate of Ernest Kruetgen and $5,000 from the estate of Bessie Kultgen. In each instance the will stipulated that the money be spent only for cancer research. The society will therefore accept applications for grants-in-aid to support responsible cancer research projects to be considered by a special committee. Applications should contain full details concerning the nature of the project and what is hoped in the way of accomplishment. Sufficient information should be supplied to assure the committee that personnel concerned in the research are qualified and that adequate facilities are available. Applications will be accepted until January 1, 1952, and should be addressed to Dr. John A. Rogers, Executive Director, American Cancer Society, Illinois Division, Inc., 139 N. Clark St., Chicago 2.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Chicago

Testimonial Dinner for Dr. Hess.—Friends and former students of Dr. Julius H. Hess, professor emeritus, department of pediatrics of the Universtiy of Illinois College of Medicine, will give a testimonial dinner in his honor at 6:30 p. m., January 23, at the Congress Hotel. Those wishing to attend should send a check for $10, made payable to the Dr. Julius H. Hess Banquet Fund, to Dr. Samuel J. Hoffman, 629 South Wood St.

Award for Plan to Improve Medical Care.—Offer of an award of $1,000 to the resident of Cook County submitting the best plan for improving medical care was announced December 3 by the Chicago Medical Society. Entries will not be judged on literary quality but on excellence of ideas. The rules governing the essay contest are as follows: 1. The subject of the essay shall be, in general, the improvement of medical care within the framework of the free enterprise system. Plans involving any form of complete government control of our medical care system will not be considered. 2. Essays shall be limited to 1,500 words. They shall be typewritten on only one side of the page, double-spaced, and the author's name and address must appear at the upper right hand corner of the first page. 3. All entries must be received in duplicate not later than March 1, 1952, in the office of the Chicago Medical Society, 86 East Randolph St., Chicago 4. All residents of Cook County are eligible to compete, except doctors of medicine, their office employees, and members of their families, and employees of the American Medical Association, Illinois State Medical Society, or Chicago Medical Society. 5. Five essays will be selected for final consideration. Each of the finalists will be requested to complete a questionnaire form to establish his eligibility and compliance with the contest rules. The winner will be notified about April 1.

Lectures in Biochemistry.—A special lecture series on "Selected Topics in Biochemistry" will be offered Wednesday evenings during the winter quarter at the Downtown Center of the University of Chicago, 19 S. LaSalle St., beginning January 23. Lectures will cover three areas, "Social Implications of Biochemistry," "New Techniques in Biochemical Research," and "The Role of Biochemistry in Related Fields," and are designed for the general student rather than the advanced biochemist. A series ticket is $9 and single admissions are $1.50. The schedule of lectures is as follows:

January 23, lecturer to be announced, Effect of Chemical Progress on the Practice of Medicine
January 30, Thomas B. Coolidge, associate professor of biochemistry, Nutrition and Population.
February 6, Henry R. Kraybill, Ph.D., director of research and education, American Meat Institute Foundation, Contributions of Agricultural Biochemistry.
February 13, Merlin S. Bergdoll, Ph.D., assistant professor of biochemistry, Chromatography.
February 20, Bernard S. Schweigert, Ph.D., research associate in biochemistry, Microbiological Assay.
February 27, H. G. Williams-Ashman, fellow in surgery, Biochemistry of Cancer.
March 5, Leon O. Jacobson, associate professor of medicine, Radiation Injury.
March 12, James W. Moulder, Ph.D., assistant professor of biochemistry, Biochemistry in Microbiology.

KENTUCKY

State Association Annual Awards.—The Kentucky State Medical Association at its annual meeting in October presented its three annual awards. Dr. Carl Norfleet, Somerset, who received the Distinguished Service Award, has been a member of the Pulaski County Board of Health for over 40 years and has served the association as councilor. He was a delegate to the house and has been a member of the Medical Economics Com-

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mittee for more than 10 years. Dr. Joshua B. Lukins was given the E. M. Howard Award for outstanding service in behalf of organized medicine. He has been the association's delegate to the American Medical Association since 1941 and is a member of the American Medical Association Judicial Council. He was president of the Kentucky association in 1935-36 and has been chairman of the Medico-Legal Committee for 27 years. The J. Watts Stovall General Practitioner Award was presented to Dr. John E. Kincheloe, Hardinsburg, who has practiced there since 1899. The award was accepted by his son since Dr. Kincheloe was ill.

MASSACHUSETTS

Multiple Sclerosis Research Grant.—A grant of $39,744 has been made by the National Multiple Sclerosis Society to the Harvard Medical School and Massachusetts General Hospital, Boston, for studies in multiple sclerosis under the supervision of Dr. Raymond D. Adams, chief of the neurological service of the hospital. A research clinic will be established at Massachusetts General Hospital for the diagnosis, treatment, and study of multiple sclerosis patients. Patients in the Boston area will be considered for admission to this clinic.

MINNESOTA

Personals.—Dr. Charles H. Slocumb, associate professor of internal medicine at the Mayo Foundation, Rochester, was given the Triennial Gold Medal Award by the West London Medico-Chirurgical Society in London, England, on October 5. This award is conferred on a younger scientist for outstanding work.

Cancer Lecture.—Prof. C. H. Andrewes, National Institute for Medical Research, University of Leeds, London, England, will give the annual George Chase Christian Cancer Lecture at the University of Minnesota Medical School, Minneapolis, on January 15. His subject will be "Current Thoughts on Viruses and Cancer."

Society News.—Dr. Charles G. Uhley of Crookston was elected president of the Minnesota Division of the American Cancer Society at the recent annual meeting of the board. Stanley Hawks of Minneapolis, John J. Bittner, Ph.D., head of the department of cancer biology at the University of Minnesota, and Dr. David P. Anderson of Austin were elected vice-presidents.

MISSOURI

Personal.—Dr. Walter L. Brandon of Poplar Bluff has been elected president of the State Board of Medical Examiners. Dr. William J. Shaw of Fayette is secretary-treasurer.

Meeting on Surgery Honors Dr. Graham.—Approximately 250 surgeons throughout the country came to St. Louis to honor Dr. Evarts A. Graham, professor emeritus of surgery at the Washington University School of Medicine, St. Louis, November 29-30. Dr. Graham retired as head of the department and Bixby Professor of Surgery last July 1. At a dinner Friday evening in the Jefferson Hotel announcement was made of the establishment of the Evarts Ambrose Graham Award, which is to be given periodically to the surgeon who has made the most outstanding contribution internationally to surgery. The fund for the award, a medal, was contributed by former students of Dr. Graham. The principal speaker was Dr. Edward Delos Churchill, professor of surgery at Harvard Medical School and surgeon-in-chief of the Massachusetts General Hospital, Boston, who discussed Dr. Graham's career. Scientific sessions were held Thursday and Friday in the medical school auditorium. Among former students who presented papers were Dr. Brian B. Blades, George Washington University, Washington, D. C.; Dr. Warren Cole, University of Illinois, Chicago; Dr. Robert M. Moore, University of Texas, Galveston, and Dr. Nathan A. Womack, University of North Carolina, Chapel Hill. Dr. Graham has been a member of the medical school faculty for 32 years. He is considered a "surgical pioneer" and is well known for his work on the gallbladder and surgical treatment of cancer of the lung.

Hospital Physicians Receive Medals.—Forty-six physicians who had been in voluntary attendance at least 20 years at Kansas City General Hospital as teachers and workers received gold medals November 6 at the first medical staff meeting of the season. The medals were inscribed "in recognition of professional services rendered to Kansas City's less fortunate through the Kansas City General Hospital." Dr. Charles C. Conover, who was a student surgeon at the hospital in 1893 and a staff member from 1896 to 1934, had been associated with the hospital for the longest period. Others have been in practice in Kansas City from 30 to 50 years and still continue their advisory work at the hospital. The following physicians were honored: Theodore H. Aschmann, Jess V. Bell, Peter T. Bohan, Harvey P. Boughnou, Clarence S. Capell, Charles C. Conover, Charles C. Dennie, Frank D. Dickson, O. Jason Dixon, B. Landis Elliott, James R. Elliott, Ambrose E. Eubank, Eugene H. Ferguson, Paul A. Gempel, Edward T. Gibson (deceased), Max Goldman, Buford G. Hamilton, Jefferson City, Mo., H. Lewis Hess, Walter F. Holbrook, George H. Hoxie, Berkeley, Calif., Robert D. Irland, William R. Jackson, Albert N. Lemoine Sr., Paul Lux, Herman S. Major, James G. Montgomery, Benjamin L. Myers, Andrew W. McAlester Jr., George F. Pendleton, Bertram A. Poorman, George W. Robinson Sr., Robert M. Schauffler, Edwin Henry Schorer, David L. Shumate, Morris B. Simpson, J. Milton Singleton, Samuel H. Snider, Frank R. Teachenor, Druery R. Thorn, Harrison C. Trippe, Herbert Tuthill, Ross H. Underwood, Herbert S. Valentine, Damon O. Walthall, Edwin C. White and R. Lee Hoffman.

NEW HAMPSHIRE

Medical Society State Defense Meeting.—State and county defense committees were invited by the New Hampshire Medical Society's Committee on Emergency Medical Service to attend a symposium on national defense December 9 in Concord. Dr. Daniel J. Sullivan, Nashua, head of the society's committee, planned the symposium as a follow-up meeting for the National Conference on Civil Defense, which he attended in Chicago on November 9-10. Also invited to the meeting were representatives of the dental profession, hospitals, and nurses.

NEW YORK

Masonic Grants to Medical Schools.—The Masonic Foundation for Medical Research and Human Welfare, representing the New York Masons, presented special funds totaling $192,923.55 for medical research at six state medical schools. Recipients of the grants made October 24 are the University of Rochester, $26,657.85; State University of New York, Syracuse, $24,984.72; New York University, $72,623.83; Columbia University College of Physicians and Surgeons, $25,379.46; University of Buffalo, $19,650.60, and Irvington House for Cardiac Children, Irvington-Hudson, $23,618.09.

New York City

Plans for Institute of Administrative Medicine.—Dr. Willard C. Rappleye, dean of Columbia University's faculty of medicine, November 18 announced plans for setting up an Institute of Administrative Medicine, within the framework of the School of Public Health. It will combine training of graduate medical students for administrative leadership with research to determine the best methods for delivering maximum medical care at reasonable cost. An advanced degree in administrative medicine will be offered. In Dr. Rappleye's opinion, the end-result of this kind of training program will be the return of the administration of health to specially trained members of the medical profession. The administrator trained in the institute will be qualified to deal with the health and allied problems which are arising in every community, including (1) the increase in the average age of the population, which will necessitate increasing attention to facilities for the treatment of persons with chronic diseases; (2) increasing specialization in the medical profession, and the need for teamwork represented by group practice in many aspects of medical service; (3) the need for modern diagnostic laboratory facilities and personnel in many communities; (4) the rapid growth of hospital and medical insurance plans;

(5) the need for strengthening the ambulatory services of hospitals; (6) the need for developing home medical services, and (7) the continued development of programs of preventive medicine. Representatives of various voluntary and municipal hospitals, voluntary agencies, public health, medical, and other facilities in the New York area will be members of the coordinating group.

NORTH CAROLINA

Teaching with Motion Pictures.—The Duke University School of Medicine has produced more than 20,000 feet of teaching film and more than 6,000 colored slides under a program supported in part by a grant from the National Foundation for Infantile Paralysis. The program is under the direction of Dr. Joseph S. Markee, a professor of anatomy, who has worked with medical visual aids for 20 years. Students in anatomy get a movie preview of each quarter's work before classes begin. The full-length film is then divided into 20-minute short subjects, and students take advantage of continuous movie showings every afternoon to view the appropriate short subject. Two years later, when students take their examinations, they come back for a review-and-refresher showing and see the full length films again. Dr. Markee is a member of the motion picture committee of the Association of American Medical Colleges and a member of the Motion Picture Association of the American Academy of Anatomists.

PENNSYLVANIA

Health Poster Exhibit.—An exhibition of foreign health posters gathered by the Medical Society of the State of Pennsylvania will be open to the public through January 13 in the Reading Public Museum and Art Gallery. These posters on various health topics from fifty countries have been shown in the Pennsylvania State Museum in Harrisburg, the Cleveland Health Museum, and the fine arts galleries of the University of Pittsburgh. They have been on view in Reading since December 2.

Certificates for Postgraduate Instruction.—Certificates are being presented to 107 Pennsylvania physicians who have attended for three years the courses of instruction presented under the auspices of the Commission on Graduate Education of the Medical Society of the State of Pennsylvania. The certificates, signed by the deans of the seven medical schools of Pennsylvania, state that the recipients have attended the courses for approximately 220 hours, which have included instruction in medicine, surgery, pediatrics, and obstetrics. These refresher courses are presented five days in the fall and five days in the spring in 10 teaching centers throughout Pennsylvania. A faculty of 175 instructors from the medical schools of Philadelphia and Pittsburgh will teach in the centers throughout the year.

Philadelphia

Shmookler Lecture.—The Henry B. Shmookler Memorial Lecture of Mount Sinai Hospital will be given at the nurses' home auditorium at 9 p. m., December 27. Dr. John W. Gofman, associate professor of medical physics at the Donner Laboratory of Medical Physics, University of California, Berkeley, will speak on "Recent Concepts of the Pathogenesis of Atherosclerotic Cardiovascular Disease."

Society News.—The November meeting of the Pennsylvania Academy of Physical Medicine and Rehabilitation was held on November 15 in Philadelphia. The scientific program included the following:

J. Eugene Ruben, Stellate Ganglion Block in the Treatment of Apoplexy and Vasospastic Conditions.

Scott Whitehouse, Intravenous Tetracaine in the Treatment of Pain of Arthritis.

Richard T. Smith and Irwin F. Hermann, Rehabilitation in Rheumatic Diseases.

Neurology Building Addition.—On October 30 the Charles K. Mills Neurology Building was dedicated at Philadelphia General Hospital. This 750-bed addition was built at a cost of 8 million dollars and contains a complete division of physical medicine and rehabilitation. At the opening exercises addresses were delivered by Hon. Bernard Samuel, mayor, City of Philadelphia; William C. Brown, state secretary of welfare; Drs. Rufus S. Reeves, director of public health; Pascal F. Lucchesi, medical director, Philadelphia General Hospital, and S. Dale Spotts, president of the medical board of the hospital. The guest speaker was Dr. Henry Alsop Riley, New York Neurological Institute, College of Physicians and Surgeons, Columbia University.

TEXAS

Personals.—Dr. Eugen Kahn, New Haven, Conn., has been appointed professor of psychiatry at Baylor University College of Medicine, Houston. He is a former Sterling Clinical Professor of Psychiatry at Yale University School of Medicine.

Course in Surgery.—A refresher course on traumatic and emergency surgery will be offered at the University of Texas Medical Branch, Galveston, January 7-11. This course is designed particularly for general practitioners and is to be sponsored jointly by the Medical Branch and the Texas State Medical Association.

VIRGINIA

Personal.—Dr. James Robert Cash, since 1931 Walter Reed Professor of Pathology at the University of Virginia Department of Medicine, Charlottesville, was honored on his 20th anniversary, December 1, by colleagues and friends at a banquet at Keswick Country Club, Charlottesville.

New Hospitals.—The Louise Obici Hospital was dedicated at Suffolk last fall. This 100-bed hospital is a memorial to Mrs. Louise Obici, wife of the founder of the Planters Nut and Chocolate Company of that city. The Shenandoah County Memorial Hospital was also dedicated in September. This hospital is located at Woodstock and cost $800,000.

WEST VIRGINIA

Health Education Director Goes to Panama.—Mr. William H. Rost, director of the bureau of public health education of the state department of health, has resigned to accept an appointment on the field staff of the Institute of Inter-American Affairs. He will serve as health education consultant to the Ministry of Health at Panama City, Panama Canal Zone. The activities of the new program include the construction and operation of health centers, the conduct of a campaign against epidemic and endemic diseases, the dissemination of health information, and the training of local health personnel in modern public health practices. The program provides that the host country supply the major portion of the personnel and funds, with the United States Government furnishing technical assistance. Dr. Benjamin M. Drake, deputy director of health, will serve as acting director of the bureau of public health education until a successor to Mr. Rost is appointed.

GENERAL

Measles.—The incidence of measles increased the week ending November 24 as compared with the previous week and for the same week last year, according to the U. S. Public Health Service. Approximately three-fourths of the cases for the current week were reported in the northeastern states. Since the seasonal low week, about September 1, a total of 20,144 cases have been reported, as compared with 12,700 for the same period of 1950.

Award in Industrial Ophthalmology.—At the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago, October 14-18, the annual award from the Committee on Industrial Ophthalmology was presented to Captain Charles W. Shilling, MC, USN, Deputy for Bio Sciences, Office of Naval Research and director Research Division, Bureau of Medicine and Surgery, Washington, D. C., "in recognition of outstanding leadership and service to scientific research."

Kiwanis Plans Study of Spastic Paralysis.—Funds for a $75,000, five-year research program on spastic paralysis are being raised by the Illinois and Eastern Iowa district of Kiwanis International through voluntary contributions from the members, according to Harry S. Himmel of Chicago, chairman of the district's spastic child committee. The money will be used to

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maintain a specially trained physician at one of the medical schools in the Chicago area to devote his full time and energy to research into the cause, prevention, and treatment of spastic paralysis. When the entire sum is pledged, the district will set up a Foundation for Research for Spastic Paralysis to carry out the program.

International Prize on Trachoma.—The International League Against Trachoma will give an international prize of 100,000 French francs in 1952 for the best work on etiology, pathogeny, pathologic anatomy, or physiology of the trachomatous eye. The award was created by Mrs. Cuenod and Roger Nataf of Tunis. Five copies of the work accompanied by an abstract of four typewritten pages in French, English, Italian, and Spanish, must be sent to the Secretary General, Dr. Jean Sedan, 94, rue Sylvabelle, Marseilles, before March 1, 1952. The winning work will be published in various languages in the *Revue Internationale du Trachome*. The prize will be awarded at the general meeting of the Congress of the Societe Francaise d'Ophthalmologie in 1952.

Fulbright Scholars in United States.—Lists of visiting scholars from abroad receiving travel grants in the Fulbright program for 1951-52 are now available from the Committee on International Exchange of Persons, Conference Board of Associated Research Councils, 2101 Constitution Avenue, N. W., Washington 25, D. C. Many of the scholars at assigned institutions would welcome invitations to visit other institutions, provided the expense of travel was covered by the university or college inviting them. It is suggested that such invitations include clear information as to the expense involved because of the limited dollar resources of most of the visiting scholars. A total of 69 scholars in medicine are in the United States for periods varying from three to nine months.

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Grants for Research on Blindness.—The National Society for the Prevention of Blindness has made grants totaling $8,942 for research on eye diseases and defects that can lead to blindness. At present only a few hundred thousand dollars is spent annually in the United States for research on blindness. In contrast, the American public last year spent 125 million dollars for pensions and care of those already blind. Grants went to the Massachusetts Eye and Ear Infirmary in Boston, Western Reserve University in Cleveland, and Washington University School of Medicine and McMillan Eye Clinic in St. Louis. A portion of the funds in the Western Reserve and Washington University grants came from a New Jersey organization, New Eyes for the Needy, which is cooperating in the national research program.

Society Elections.—At the annual meeting in Vancouver, B. C., in November the North Pacific Surgical Association elected as major officers for 1952 Dr. Richard E. Ahlquist of Spokane, Wash., president; Dr. Thomas M. Jones of Victoria, B. C., first vice-president, and Dr. John A. Duncan of Seattle, secretary-treasurer.——The board of directors of the Mississippi Valley Medical Society, at its annual meeting in Quincy, Ill., November 18, elected the following officers for 1952: Dr. John I. Marker, Davenport, Iowa, president-elect, and Dr. Harold Swanberg, Quincy, Ill., secretary-treasurer. Dr. Daniel L. Sexton of St. Louis is the 1952 president. The annual meeting will be held at the Jefferson Hotel in St. Louis, October 1-3, 1952. The annual meeting of the American Medical Writers' Association will be held at the same hotel on October 1.——The American College of Surgeons at its annual meeting in San Francisco November 8 installed Dr. Alton Ochsner, New Orleans, as president, and chose Dr. Harold L. Foss, Danville, Pa., as president-elect. The secretary and the treasurer, appointed officers, are, respectively, Drs. Michael Mason and Warren H. Cole, Chicago. The next annual meeting will be held at the Waldorf-Astoria in New York September 22-26.

Fellowships in Cancer Research.—The American Cancer Society is offering a limited number of clinical fellowships and traineeships for postgraduate training in medicine, emphasizing diagnosis and treatment of cancer. Traineeships carry a maximum stipend of $3,600, and the recipient must be not over 40 years of age. Two types of training may be provided: 1. General training in diagnosis and treatment of cancer and other malignant diseases, with instruction and practice in diagnosis, surgery, radiation therapy, medicine, and pathology without reference to the usual specialty. 2. Specific training in a restricted discipline or specialty, i. e., surgery or surgical specialties, pathology, radiology, and internal medicine, with instruction and practice which places major emphasis on cancer and other malignant diseases within the purview of the specialty selected. Fellowships and traineeships available on and after July 1, 1952, will be awarded for one year and are renewable for three years. Fellowships and traineeships are awarded to institutions only upon application by deans, executive officers, or department heads. Individuals desiring such fellowships or traineeships should consult the appropriate authority in the institution of their choice. Applications for the year 1952-53 must be submitted prior to Jan. 1, 1952. Further information may be obtained from the American Cancer Society, Professional Education Section, 47 Beaver St., New York 4.

Rehabilitation Services Needed.—To implement the work of physicians in rehabilitating crippled children, 30,000 occupational therapists, 26,000 physical therapists, 20,000 speech and hearing therapists, and 80,000 special teachers will be needed in the next five years to give adequate treatment, training, and education to handicapped children and adults, according to the National Society for Crippled Children and Adults, Chicago. Mr. Linck, executive director, said that a nationwide recruitment and training program for these fields is imperative. The estimate is based on results of the society's nation-wide survey of actual needs. Requests for physical therapists head the list of the National Society's Personnel Registry and Employment Service, most of them coming from physicians who have no facilities for physical therapy in their communities. The objective of these workers would be full utilization of the capabilities of millions of crippled children and adults whose skills are a great resource for industry and the professions. The national society has established scholarships and fellowship programs in cooperation with state societies and two national women's fraternities. Nearly 700 professional scholarships have been awarded as a result of this program. To aid in the recruitment of workers, the national society also maintains a free national Personnel Registry and Employment Service which cooperates with other professional organizations and which last year handled 2,412 referrals and 875 professional placements in critical jobs.

Merck Fellowships in Natural Sciences.—The National Research Council, Washington, D. C., has announced the availability of Merck Postdoctoral Fellowships in the Natural Sciences for 1952-53. All fields of chemistry and biology, including the preclinical medical sciences, are open to applicants. The fellowships carry stipends ranging from $3,000 to $5,000 plus travel expenses, and are offered annually to citizens of the United States with training in chemistry or biology equivalent to that represented by a Ph.D. degree. The program, supported by Merck & Co., Inc., manufacturing chemists of Rahway, N. J., is administered by the National Research Council, with which applications must be filed before Jan. 15, 1952. The purpose of the Merck Fellowships is to make possible special training, education, and development of young men and women who have demonstrated marked ability in research in chemical or biological science and who wish to broaden their fields of investigation. Fellowships will be awarded as soon as possible after March 1. Appointments are for one year, with tenure beginning July 1, 1952, unless otherwise arranged. Study may be carried out in this country or abroad. A stipulation is that each fellow shall pursue his research at an institution other than that which granted his doctoral degree, except in unusual cases. The fellowships were established in 1946 with a grant of $100,000 from Merck & Co., Inc., since supplemented by additional grants totalling $95,000. Further information and application blanks may be obtained from the Fellowship Office, National Research Council, 2101 Constitution Ave., Washington 25, D. C. A similar fellowship program has been established in Canada by Merck & Co. Limited, the Canadian subsidiary of Merck & Co., Inc., and is administered there by the National Research Council of Canada.

International Conference on Vitamins and Metabolism.—The University of Havana School of Medicine and Fundacion de Investigaciones Medicas are sponsoring an international conference on vitamins and metabolism in Havana, Cuba, January 25. This meeting will be held in the auditorium of the General Calixto Garcia Hospital in Havana from 8:30 a. m. to 9 p. m. The program will consist of lectures by many of the scientists who discovered, isolated, and synthesized vitamins. The fundamental chemistry, physiology, pharmacology, and pathology of vitamin deficiency diseases will be discussed, as well as methods of prophylaxis and treatment. Illustrative cases will be presented. The general chairmen of the conference will be Dr. Angel Vieta Barahona, dean of the medical school of the University of Havana; Dr. Jose Bisbe Alberni, professor of general pathology of the University of Havana, and Dr. Richard H. Young, dean of Northwestern University Medical School, Chicago. Among the North American speakers will be George R. Cowgill, Ph.D., Yale University, New Haven, Conn.; Conrad A. Elvehjem, Sc.D., University of Wisconsin, Madison; Karl A. Folkers, Ph.D., Merck and Company, Inc., Rahway, N. J.; Max F. Further, Ph.D., Hoffmann-La Roche & Company, Nutley, N. J.; Robert S. Harris, Ph.D., Massachusetts Institute of Technology, Cambridge; Dr. Philip S. Hench, Mayo Clinic, Rochester, Minn.; Thomas H. Jukes, Ph.D., Lederle Laboratories, Pearl River, N. Y.; Charles G. King, Ph.D., The Nutrition Foundation, Inc., New York; Herbert G. Luther, Charles Pfizer and Company, Inc., Brooklyn; Dr. William P. Murphy, Peter Bent Brigham Hospital, Boston; Dr. William H. Sebrell Jr., National Institutes of Health, Bethesda, Md.; Dr. Elmer L. Sevringhaus, Hoffmann-La Roche, Inc., Nutley, N. J.; William Shive, University of Texas, and Robert R. Williams, M.S., Research Corporation, New York. Dr. Ramon Suarez, Fundacion de Investigaciones Clinicas, San Juan, Puerto Rico, will also be a speaker. The faculty of the University of Havana will present representative clinical cases. Dr. Tom D. Spies, Dr. Robert E. Stone, and Samuel Dreizen, D.D.S., Birmingham, Ala., will assist in the presentation of clinical cases which they have studied in Havana. The Hotel Nacional, the Hotel Presidente, and the Hotel Sevilla-Biltmore, three of Havana's leading hotels, are accessible to the General Calixto Garcia Hospital. The Southern Medical Association, the American Medical Association, and the World Medical Organization will be officially represented at this conference.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*, Jan. 28-30. All centers where there are five or more candidates. Final date for filing application is Dec. 17. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Various Locations, July 18. Final date for filing application is Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Various centers, March 1952. *Oral*. Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Candidates for these tests must have completed three years of approved training prior to July 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral*. Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written*. Feb. 1, 1952. Final date for filing applications was Nov. 1. *Oral*. Chicago, June 9-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written*. Twenty-five centers, Feb. 4-5, 1952. Sec., Dr. Edwin B. Dumphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Final date for filing applications for the 1952 Part II examinations was Aug. 15. Final date for filing application for the 1952 Part I examination is Nov. 30. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF PEDIATRICS: Written examination under local monitors, Jan. 11. This is the only written examination which will be given during 1952. *Oral*. New York City, Feb. 1-3; St. Louis, Mo., April; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II*. Chicago. June 9-10. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral* New York, Dec. 17-18. Final date for filing applications was Sept. 1. Act. Sec., Dr. David A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral*. Spring 1952. Final date for filing application is Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written*. Various Centers, March 1952. Final date for filing application was Dec. 1, 1951. The following written examination will be given in October 1952. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

BOARD OF THORACIC SURGERY: Various parts of the country. *Written*. Feb. 29, 1952. Final date for filing application is Jan. 15. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

AMERICAN BOARD OF UROLOGY: Chicago, Feb 9-13, 1952. Final date for filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

MEETINGS

AMERICAN COLLEGE OF CLINIC ADMINISTRATORS, Conrad Hilton Hotel, Chicago, Jan. 13-15. Dr. R. J. Wilkinson Jr., 1115 Sixth Avenue, Huntington, W. Va., President.

AMERICAN COLLEGE OF RADIOLOGY, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN SOCIETY FOR SURGERY OF THE HAND, Palmer House, Chicago, Jan. 25-26. Dr. J. H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, William Penn Hotel, Pittsburgh, Jan. 18-19. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

INTERNATIONAL MEDICAL ASSEMBLY OF SOUTHWEST TEXAS, Municipal Auditorium, San Antonio, Jan. 22-24. Dr. John J. Hinchey, P. O. Box 2445, San Antonio 6, Secretary.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Dec. 12-16. Dr. Victor J. Montilla, P. O. Box 3866, Santurce, Secretary.

SOUTHERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Atlanta, Ga., Jan. 14. Dr. Lester A. Brown, 490 Peachtree St. N.E., Atlanta 3, Ga., Vice President.

INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33, Prinsegracht, The Hague, Netherlands, Secretary.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Mexico City, Mexico, Nov. 2-6. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

INTERNATIONAL COLLEGE OF SURGEONS, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19. Mrs. Grace E. O'Neill, Division of World Affairs, National Association on Mental Health, 1790 Broadway, New York 19, N. Y., U. S. A.

INTERNATIONAL CONGRESS ON NEUROPATHOLOGY, Rome, Italy, Sept. 8-13. Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2, England, Hon. Secretary.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

NEURORADIOLOGIC SYMPOSIUM, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Mexico City, Mexico, Jan. 6-12. Dr. Luis Sanchez Bulnes, Gomez Farias 19, Mexico 4, D.F., Secretary-General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Havana, Cuba, Jan. 20-24. Dr. Pedro Hernandez Gonzals, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

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DEATHS

Ippolito, Anthony Samuel ⊕ Chicago; born in Chicago Sept. 19, 1917; Loyola University School of Medicine, Chicago, 1943; instructor of orthopedic surgery at the University of Illinois College of Medicine and the Cook County Graduate School of Medicine; specialist certified by the American Board of Orthopaedic Surgeons; member of the American Academy of Orthopaedic Surgery, Chicago Orthopaedic Society, and the Clinical Orthopaedic Society; fellow of the American College of Surgeons; a captain in the medical corps of the U. S. Army during World War II, serving at a first aid station in Germany for many months; examining physician for the children who were members of the Hull House; affiliated with Columbus, St. Elizabeth's, and Cook County hospitals; at one time star fullback of Purdue University in La Fayette, Ind., and the Chicago Bears football team; died near Evanston, Wyo., in a train accident November 12, aged 34.

Harvey, Norman Darrell ⊕ Pelham, N. Y.; born in 1865; College of Physicians and Surgeons, medical department of Columbia College, New York, 1888; past president of the Rhode Island Medical Society; member of the American Academy of Ophthalmology and Otolaryngology, American Otological Society, New England Ophthalmological Society, and the New England Otolaryngological Society; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; served with the Rhode Island National Guard, and during the Spanish-American War; for many years practiced in Providence, R. I., where he was a consulting surgeon at Rhode Island Hospital and consulting ophthalmic surgeon at Providence Lying-In Hospital, Butler Hospital, Charles V. Chapin Hospital, and Newport (R. I.) Hospital; died in a hospital at New Rochelle, October 13, aged 86.

Ehler, Adrian Augustus, Albany, N. Y.; born in New Rochelle, N. Y., Oct. 5, 1908; Yale University School of Medicine, New Haven, 1933; associate professor of surgery (thoracic surgery), Albany Medical College; instructor in thoracic surgery, University of Michigan Medical School, Ann Arbor, from 1937 to 1939; certified by the National Board of Medical Examiners; member of the American Medical Association, American Trudeau Society, and the American Association for Thoracic Surgery; fellow of the American College of Surgeons; director of the Albany County Tuberculosis Association and vice-president of the Albany County Heart Association; served on the staffs of Glenridge Sanatorium in Schenectady, Homestead Sanatorium in Middle Grove, Pine Crest Sanatorium in Salisbury Center, Vermont Sanatorium in Pittsford, and the Albany Hospital, where he died November 5, aged 43, of acute leukemia.

Bland, Curtis ⊕ Oaktown, Ind.; Medical College of Indiana, Indianapolis, 1905; served overseas during World War I; died in the Veterans Administration Hospital, Indianapolis, September 6, aged 78, of hypertensive cardiovascular disease.

Chesley, Harry Oscar, Rollinsford, N. H.; Dartmouth Medical School, Hanover, 1898; member of the American Medical Association; died August 5, aged 79, of carcinoma of the colon and liver.

Clothier, Joseph V., Pocatello, Idaho; University of Pennsylvania Department of Medicine, Philadelphia, 1900; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; affiliated with Pocatello General Hospital; died in Encino, Calif., October 16, aged 72.

Covner, Albert Henry ⊕ Lynn, Mass.; Tufts College Medical School, Boston, 1924; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; affiliated with Lynn and Union hospitals; died November 9, aged 51.

⊕ Indicates Fellow of the American Medical Association.

Cunningham, Thomas Edward ⊕ Cambridge, Mass.; Harvard Medical School, Boston, 1910; an Associate Fellow of the American Medical Association; died in Holy Ghost Hospital September 11, aged 68, of multiple cerebral thrombosis.

Dougherty, John Allen ⊕ Oakland, Calif.; Vanderbilt University School of Medicine, Nashville, Tenn., 1916; specialist certified by the American Board of Urology; member of the American Urological Association; fellow of the American College of Surgeons; served in France during World War I; affiliated with Alameda County, East Oakland, and Providence hospitals in Oakland, Alameda Hospital in Alameda and Richmond Hospital in Richmond; died in Piedmont October 6, aged 60, of bulbar palsy and pulmonary tuberculosis.

Drago, Christie Joseph, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1918; member of the American Medical Association; served during World War I; for many years on the staffs of Hospital of St. Giles the Cripple and the Samaritan Hospital; died October 23, aged 58, of cerebral hemorrhage.

Durling, James Krotzer ⊕ Wadsworth, Ohio; University of Michigan Homeopathic Medical College, Ann Arbor, 1919; served as president, vice-president, secretary, and treasurer of Medina County Medical Society; died in the Cleveland Clinic Hospital in Cleveland recently, aged 57, of congestive heart failure and arteriosclerotic heart disease.

Embry, Jerre Carl, Vincent, Ala.; Atlanta Medical College, 1889; member of the American Medical Association; died in Birmingham August 21, aged 85, of massive hemorrhage and carcinoma of the stomach.

Emerson, William Robie Patten ⊕ Boston; Harvard Medical School, Boston, 1899; an Associate Fellow of the American Medical Association; member of the New England Pediatric Society; professor of pediatrics emeritus at Tufts College Medical School; on the staffs of the Boston City and Massachusetts General hospitals; died September 5, aged 81, of cerebral hemorrhage.

Fisher, James E., Rome, Tenn.; University of Nashville Medical Department, 1907; died August 10, aged 71, of carcinoma of the pancreas.

Graham, Thomas Garland, Lafayette, Ind.; University of Louisville (Ky.) School of Medicine, 1933; member of the American Medical Association; served during World War II; on the staffs of Lafayette Home Hospital and St. Elizabeth Hospital; died October 7, aged 42, of injuries received in a plane accident.

Hagen, Walter Thomas, Green Bay, Wis.; Jefferson Medical College of Philadelphia, 1891; died August 15, aged 82, of cardiac decompensation and chronic myocarditis.

Hamer, John Dayton, Lowell, Ariz.; University of Nebraska College of Medicine, Omaha, 1937; member of the American Medical Association; died October 12, aged 39.

Hanson, Herbert Theodore, Madison, Wis.; University of Minnesota Medical School, Minneapolis, 1946; assistant professor of physiological chemistry at the University of Wisconsin Medical School; on the staff of Wisconsin General Hospital; died August 25, aged 30, of brain tumor.

Johnson, Raymond Lovejoy, Waycross, Ga.; University of Maryland School of Medicine, Baltimore, 1914; member of the American Medical Association; fellow of the American College of Surgeons; served on the staff of Ware County Hospital, where he died September 1, aged 69, of coronary occlusion.

Kory, Roscoe Conklin ⊕ Little Rock, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1910; emeritus professor of surgery (ophthalmology) at the University of Arkansas School of Medicine; member of the staffs of St. Vincent's Infirmary, Missouri Pacific Hospital, and Arkansas Baptist Hospital; died September 29, aged 66, of coronary occlusion.

Lampe, Elmer Lewis ✠ Bellevue, Iowa; State University of Iowa College of Medicine, Iowa City, 1910; for many years health officer; on the staff of Bellevue Memorial Hospital; affiliated with Finley and St. Joseph Mercy hospitals in Dubuque; died in University Hospital, Iowa City, September 22, aged 66, of ruptured aneurysm of the right internal iliac artery.

McClelland, Charles Stewart, Butler, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; died August 22, aged 80, as the result of a fractured back received in a fall.

Mitchell, Wilfrid Bede ✠ Detroit; Detroit College of Medicine and Surgery, 1925; specialist certified by the American Board of Obstetrics and Gynecology; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; served during World Wars I and II; affiliated with Grace Hospital, where he died October 20, aged 53, of intraventricular hemorrhage.

Mitchell, William Wright, Memphis, Tenn.; Memphis Hospital Medical College, 1907; Columbia University College of Physicians and Surgeons, New York, 1908; also a lawyer; died October 9, aged 68, of uremia.

Negley, James Casper ✠ Glendale, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; member of the American Urological Association; fellow of the American College of Surgeons; specialist certified by the American Board of Urology; on the staff of Los Angeles County Hospital in Los Angeles and the Physicians and Surgeons Hospital in Glendale; died in Glendale Sanitarium and Hospital October 23, aged 68, of coronary occlusion.

Powell, Nettie Bainbridge, Marion, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the American Medical Association; past president and secretary of the Grant County Medical Society; first secretary of the Grant County Tuberculosis Association; formerly secretary of the board of health of Marion; served as a member of the board of directors of the Grant County Hospital Association; one of the founders of the Marion General Hospital; died September 26, aged 83, of cardiovascular renal disease.

Riley, Lincoln, Wisner, Neb.; State University of Iowa College of Medicine, Iowa City, 1888; served during World War I; died in Norfolk October 14, aged 84, of cerebral hemorrhage.

Rolston, Theron Rice ✠ New Hope, Va.; Medical College of Virginia, Richmond, 1929; member of the county school board; affiliated with King's Daughters' Hospital in Staunton and Community Hospital in Waynesboro; died in Tucker Hospital, Richmond, September 23, aged 49, of coronary thrombosis.

Schemmer, Anthony L., Colby, Wis.; Marquette University School of Medicine, Milwaukee, 1913; member of the American Medical Association; past president of the Clark County Medical Society; served as health officer for the town of Hull; member of the staff of St. Joseph's Hospital in Marshfield; died August 23, aged 61, of coronary thrombosis and arteriosclerotic heart disease.

Stevenson, Forney Caldwell, Montgomery, Ala.; Columbia University College of Physicians and Surgeons, New York, 1893; member of the American Medical Association; for many years a member of the county and city board of health, of which he had been president; served as president of the county board of education; affiliated with St. Margaret's Hospital; died September 9, aged 78, of suffocation when flames swept through his home.

Thompson, James Albert, St. Johnsbury, Vt.; McGill University Faculty of Medicine, Montreal, Canada, 1897; member of the American Medical Association; on the staffs of the Brightlook and St. Johnsbury hospitals; died September 29, aged 77, of coronary thrombosis.

Tremain, George W., St. Louis (licensed in Missouri in 1902); died September 21, aged 78, of heart disease.

West, Oscar Caldwell ✠ Phoenix, Ariz.; Atlanta College of Physicians and Surgeons, 1899; served as health officer of Maricopa County, and as city and county health officer in Albuquerque, N. Mex.; received decorations from the government of Mexico and from Chile for his work on bubonic plague; died October 20, aged 72, of carcinoma of the lung.

West, William Moore ✠ Monett, Mo.; Beaumont Hospital Medical College, St. Louis, 1898; an Associate Fellow of the American Medical Association and member of its House of Delegates from 1933 to 1937; fellow of the American College of Surgeons; served during World War I; for many years local registrar of vital statistics; formerly chief of staff, West Hospital, now known as St. Vincent's Hospital; died in St. John's Hospital, Springfield, Mo., October 6, aged 78, of myocardial infarction and hypertensive and arteriosclerotic heart disease.

Whisler, Edward Livingstone, Los Angeles; Starling Medical College, Columbus, Ohio, 1904; died in Hollywood Presbyterian Hospital October 22, aged 75, of carcinoma of the sigmoid.

White, John Francis, La Mesa, Calif.; College of Physicians and Surgeons of San Francisco, 1897; member of the American Medical Association; past president of the board of health of Auburn; died in Paradise Valley Sanitarium, National City, September 15, aged 77, of carcinoma.

Wigton, Harrison Alonzo ✠ Omaha; University of Nebraska College of Medicine, Omaha, 1905; professor emeritus of neuropsychiatry at his alma mater; specialist certified by the American Board of Psychiatry and Neurology; fellow of the American College of Physicians; affiliated with Douglas County Hospital, Immanuel Deaconess Institute, Clarkson Hospital, Lutheran Hospital, Nebraska Methodist Hospital, and University of Nebraska Hospital; trustee of the Hastings (Neb.) College; died October 9, aged 72, of hypertension and cerebral thrombosis.

Willis, William Moore, Farmville, N. C.; Medical College of Virginia, Richmond, 1914; died in Rocky Mount August 4, aged 61, of gastric hemorrhage and duodenal ulcer.

Witzberger, C. Michael, Tucson, Ariz.; New York Homeopathic Medical College and Flower Hospital, New York, 1934; formerly on the faculty of his alma mater; member of the American Medical Association and the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics; affiliated with Tucson Medical Center and Pima County Hospital; died August 18, aged 44, of a skull fracture received in an automobile accident.

Woods, Robert A., Clark, Mo.; University Medical College of Kansas City, Mo., 1892; died September 30, aged 82.

Wright, Eugene Orwin, Sheridan, Wyo.; Medical College of Virginia, Richmond, 1938; member of the American Medical Association; served with the Veterans Administration; died in Denver October 10, aged 39, of cirrhosis of the liver.

Yoakam, Arthur Jacob, Homer, Ohio; Starling Medical College, Columbus, 1898; died in Memorial Hospital, Mount Vernon, August 31, aged 75.

Young, Philip Samuel, Sidney, N. Y.; Albany (N. Y.) Medical College, 1896; served during World War I; died August 23, aged 77, of coronary occlusion.

Zimmerman, Joseph Jack ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1940; specialist certified by the American Board of Internal Medicine; served during World War II; instructor in medicine at his alma mater and assistant instructor in medicine at the graduate school; on the staffs of St. Agnes and Philadelphia General hospitals; died October 11, aged 36, of heart attack.

DIED WHILE IN MILITARY SERVICE

Barber, Albert C. ✠ Commander, U. S. Navy, Chicago; University of Illinois College of Medicine, Chicago, 1927; member of the Illinois State Medical Society; associated with the Chicago Board of Health on a part-time basis for many years; served during World Wars I and II; entered the medical corps of the U. S. Naval Reserve in August, 1942; following various assignments ashore and afloat, was transferred to the regular navy in July, 1946; at the time of death was serving at the naval ammunition depot in Hawthorne, Nev.; died September 30, aged 51, of injuries received in an automobile accident near Luning, Nev.

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GOVERNMENT SERVICES

SELECTIVE SERVICE

Selective Service System.—The information bulletin, vol. 2, No. 11, of the National Advisory Committee to the Selective Service System reads as follows:

Subject: New graduates in priority 3 who are also regular registrants and who have been deferred for any cause since June 19, 1951, and therefore have their liability for military service extended to their 35th birthday.

Last June there were a number who graduated from medical school who are regular registrants not having attained their 26th birthday and who then registered as special registrants in priority 3 as required by law, never having had military service subsequent to September 16, 1940, and were not deferred prior to March 31, 1947, by the Selective Service local board for the purpose of studying medicine or were not ASTP or V-12 students with less than 21 months of active duty. The percentage of such graduates will increase each year.

Your advice to local boards on these individuals should be to the effect that they be deferred until the completion of their first year of internship, as necessary in training for an essential occupation, and that at about the time of the completion of such internships, the registrant should be advised to apply for a commission and *simultaneously for immediate active duty*. If they do not apply for active duty, they will become priority 3 reserve officers which will not relieve them of their liability under the general provisions of the Universal Military Training and Service Act, as amended.

If they apply for a commission and as the result of their volunteering they are given immediate active duty, they will be classified as 1-C by their local boards on both registrations. They will thus be given the opportunity of serving their 24 months at a convenient time in their professional careers rather than at some future date, less convenient, prior to the advent of their 35th birthdays.

PUBLIC HEALTH SERVICE

Public Health Journals Merge.—Beginning in January, 1952, *Public Health Reports* will be published monthly. Two other technical publications of the Public Health Service—the *Journal of Venereal Disease Information* and the *Communicable Disease Center Bulletin*—are being merged with it. The merger has come about as the result of an extended study of the Public Health Service's publishing activities. The new journal is designed to carry out more efficiently and economically the Public Health Service's responsibilities for disseminating scientific information on matters of health.

The new *Public Health Reports* will be concerned with the technical and professional aspects of public health practice, with problems of health administration, and with research in these fields. It will include substantially the types of material that have been appearing in the three present journals and the monthly Tuberculosis Control Issue of *Public Health Reports*. There will be more emphasis, however, on administrative practice, program development, and applied research aspects and less emphasis on bench research and clinical material not directly related to public health practice. As has been true with each of the present journals, the pages of the new *Public Health Reports* will be open, on merit, to any responsible author. General editorial guidance will be provided by a board of editors composed of individuals of recognized competence and professional stature drawn from both within and outside the federal service.

Every effort will be made to furnish the new *Public Health Reports* to representative organizations in public health and its related fields. Most of the readers on the mailing list are affiliated with organizations to which free distribution can legally be made. They will continue to receive the new journal either directly or through these organizations. The first issue of the new *Public Health Reports* and an application form for a free subscription will be sent to readers now on the free lists for technical periodicals. After they have had an opportunity to review the new *Public Health Reports* and to consider its usefulness in their work, readers who wish to remain on the lists and receive the new periodical regularly should complete the application and send it in as soon as possible. This will allow time to revise the lists for mailing the second and subsequent issues. The new *Public Health Reports* will also be available by paid subscription from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Regular Corps Examination for Medical Officers.—Competitive examinations for appointment of medical officers to the regular corps of the United States Public Health Service will be held February 5-7, 1952, at a number of points throughout the United States. Applications must be received no later than January 2. Appointments will be made in the grades of assistant surgeon (equivalent to Navy rank of lieutenant [jg]) and senior assistant surgeon (equivalent to lieutenant). Gross pay is the same as for officers of equivalent rank in the Army and Navy. Entrance pay for an assistant surgeon with dependents is $5,686.56 per annum; for senior assistant surgeon with dependents, $6,546. These figures include the $1,200 annual additional pay received by medical officers as well as subsistence and rental allowance.

In making assignments, consideration is given to the officer's preference, ability, and experience; however, all commissioned officers are subject to change of station and assignment as necessitated by the needs of the service. Appointments are permanent and provide opportunities to qualified physicians for a life career in clinical medicine, research, and public health.

Applicants for either grade must be United States citizens who are at least 21 years of age and who have graduated from a recognized school of medicine. Applicants for the grade of assistant surgeon must have at least seven years of educational training and professional experience subsequent to high school. Applicants for the grade of senior assistant surgeon must have at least 10 years of educational training and professional experience subsequent to high school. Physicians who are successful in the examination and are now serving internships will not be placed on active duty in the regular corps until completion of internship.

Application forms and additional information may be obtained by writing to the Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C. Attention: Division of Commissioned Officers.

Distribution of Yellow Fever Vaccine.—According to the Surgeon General of the Public Health Service (General Circular No. 99, Supplement 1) the Rocky Mountain Laboratory of the Public Health Service is the only laboratory in the United States on the World Health Organization's list of institutions producing approved yellow fever vaccine. Because the vaccine is highly thermolabile and must be stored and transported at a subfreezing temperature, strict control of its handling is required.

The director of the Rocky Mountain Laboratory, Hamilton Mont., in collaboration with the Laboratory of Biologics Control, National Institutes of Health, is responsible for setting standards for the transportation, storage, and administration of the yellow fever vaccine. Shipments of the vaccine originate from the Rocky Mountain Laboratory and are routed directly to the user except as provided below. The vaccine is not redistributed. The vaccine is distributed in the United States to the following facilities: (1) Public Health Service facilities; (2) Department of Defense installations; (3) organizations with large numbers of employees going into yellow fever areas; and (4) one health department of a state in which a yellow fever clinic of the Public Health Service is not available. The Epidemiology and Immunization Branch of the Division of Foreign Quarantine is responsible for approving facilities for the receipt of the vaccine, and investigates compliance with requirements for handling the vaccine.

The vaccine may be sold to private concerns, or their agents, to be sent abroad for inoculation of employees in yellow fever areas. It may also be sold to approved foreign governments. Inasmuch as the vaccine is on the restricted commodity list of the Office of International Trade, Department of Commerce, all sales for the purpose of exportation except those to Canada and countries of Central and South America must be approved by that agency. Orders not meeting the requirements of the Office of International Trade will be referred to the administrative officer of the Microbiological Institute.

FOREIGN LETTERS

ITALY

Medicosurgical Association.—At the Ionian Association of Medicine and Surgery meeting in Taranto, Prof. Carlucci lectured on treatment of tuberculous epididymitis from the clinical and social points of view. He demonstrated the rare advantage of the conservative methods based on local and general injections and stated that surgical intervention for removal of the epididymis and the extrapelvic vas deferens is the most suitable treatment. This type of intervention does not impair the preeminent function of the testis, because it is limited to the elimination of the external secretion and does not interfere with the hormonal secretion. The treatment is of considerable social interest, because within days it allows persons already debilitated by the long duration of pain, depressed by the chronic disease, and accustomed to change from one hospital to the other, to resume their occupations.

Prof. Buonsanti reported on the problem of surgery of cancer of the rectum, emphasizing that this chapter of neoplastic surgery has been discussed for 125 years, i. e., since Lisfranc performed the first operation. Twenty-two years ago a convention of surgeons studied surgery of cancer of the rectum in a specific way; a statement of Prof. Biaggio on that occasion, which affirmed that there is not yet a specific operation for this pathological process, is still valid today. There are two fundamental surgical techniques: (1) radical, through the perineum and the coccyx, and (2) conservative, through the abdomen. The latter, conceived by Mayo, is best for the surgeon who is more interested in the precarious operative results than in the safety of a radical exeresis.

Today the total operative mortality rate, because of the improvements of the laparotomy technique, is highly satisfactory in the hands of such experts as Mayo, but the evaluation of statistics presenting high survival rates should be guarded since the latter may be misleading because of misconception concerning some processes that are highly invasive with respect to lymph nodes, representing Group C_2 of tumors according to Dukes' classification. The large number of surgical methods proposed (more than 30) and their late results show the need to refrain from aggravating the conditions of the patients by radical operation.

Because radical exeresis is not feasible, owing to the unknown origin of the lesion, Prof. Buonsanti considers that a conservative treatment like Mayo's is to be preferred, because it will give the patient the illusion of a desired recovery without functional sacrifices.

Nitrogen Mustard Poisoning.—Reports on experimental nitrogen mustard poisoning were presented at a meeting of the medicosurgical association of Pavia. Dr. Cattaneo made microscopic studies of the behavior of the liver in two groups of experimental animals to which nitrogen mustard had been administered by intramuscular route. Regular therapeutic doses, i. e., 0.10 mg. of nitrogen mustard per kilogram of body weight were administered for four or five consecutive days to the first group of animals, while highly toxic doses, i. e., 2 to 3 mg. per kilogram of body weight, were administered to the second group. The microscopic picture of the liver in the first group did not present significant changes. In the second group, the microscopic examination yielded evidence that nitrogen mustard in the doses used exerts a pronounced hepatotoxic action. This is characterized by more or less diffuse congestion of the liver, with some hemorrhagic foci generally localized in the intralobular spaces, and also by a cloudy degeneration of the hepatic cells associated with signs of nuclear disturbance. In some animals of the second group, severe lesions were observed associated with areas of pronounced nuclear fragmentation and small points of necrosis.

Dr. Cattaneo expressed the opinion that these lesions, in addition to the hepatotoxic action exerted by nitrogen mustard, are attributable to pre-existing areas of decreased functional activity of the liver caused by previous or still present disease processes or by circulatory disturbances. In the presence of the poison these zones have the biologic characteristics of areas of lesser resistance.

Dr. Cattaneo and Dr. Tartara reported on the histological condition of the heart and of the great vessels in experimental animals treated with nitrogen mustard intramuscularly in repeated therapeutic doses and also in highly toxic doses. Alterations were not observed in the group treated with therapeutic doses, while some lesions were observed in the second group. The great vessels sometimes showed considerable capillary dilatation in the adventitial and the periadventitial areas. The heart showed, especially in the papillary muscles and in the subendocardial areas, a pronounced ectasia of the capillaries and the precapillaries with eruption of red blood cells either by diapedesis or by rhexis, and with formation of interstitial edema. In the most involved areas the muscular fibrils presented signs of cloudy swelling and also of vacuolation. The speakers emphasized the importance of these findings in connection with the mechanism of the production of some electrocardiographic alterations observed in these animals.

Drs. F. Cattaneo and I. Cattaneo reported on the blood picture in experimental nitrogen mustard poisoning after splenectomy. As in the other experiments the animals had received nitrogen mustard intramuscularly in therapeutic doses and in highly toxic doses. Results of the research showed that splenectomy does not affect the hematopoietic response of the bone marrow to nitrogen mustard. On the contrary, splenectomy seems to have a beneficial effect on the resistance of the circulating blood elements; but this antileukocytolytic and antihemolytic effect does not seem to be of great practical importance, because it changes only slightly the course of the leukocyte and erythrocyte curves that are recorded after the administration of nitrogen mustard. Therefore, Rosenthal's concept of the necessity for splenectomy in patients with Hodgkin's disease, before nitrogen mustard is given, cannot be accepted, according to the speakers, because the direct and indirect risks associated with the surgical intervention are too numerous compared with the very slight advantages that can be obtained with splenectomy.

Professor Diamare.—The national award of the Academy of the Lincei for biologic sciences was conferred on Prof. Vincenzo Diamare, who holds the chair of histology and general physiology of the University of Naples. His studies cover all fields of biology and particularly endocrinology and comparative morphology of the pancreas and of the adrenals. Professor Diamare first described the morphological importance of the insular tissue as a structural element completely independent from the exocrine zymogenic tissue of the pancreas. These important studies paved the way for Banting and Best to discover insulin.

SWEDEN

Where Should Thoracoplasty Be Performed?—The number and variety of surgical operations for pulmonary tuberculosis grow every year in Sweden, where a conflict has lately arisen over the choice of institution in which these operations are to be performed. Is the patient to be operated on in a sanatorium, where he can enjoy all the benefits of a sanatorium regimen, or is he to be shuttled from sanatorium to surgical hospital and back again? The former plan was endorsed at a meeting in Gothenburg on May 20, 1951, of the Association of Tuberculosis Doctors, which unanimously passed a resolution to this effect. This verdict has drawn a protest from a surgeon, Dr. G. Vidfelt of the Värnamo Hospital, where 32 beds are reserved for thoracoplastic cases and many thoracoplastic operations are performed weekly. He points out that at this hospital postoperative suppuration of the pleura is almost unknown, whereas the literature on the subject shows that elsewhere up to 70% of these operations are followed by empyema—a sequel probably due to the neglect of treatment with antibiotics. Another complication is hemorrhage into the pleural cavity, which is to be expected in about 10%. It may be so severe that the pleural cavity has to be reopened and the blood clots washed out. The possibility of this and other postoperative complications means that a surgical specialist must

The items in these letters are contributed by regular correspondents in the various foreign countries.

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always be on the spot to deal with them, and at any rate the smaller sanatoriums cannot expect to have such specialists on their staffs.

Homosexual Rate in Sweden.—Kinsey's observation that in the United States more than one male in three has a homosexual record is greeted by many Europeans with the question: Are his conclusions valid anywhere outside the United States? Dr. Bengt J. Lindberg and Dr. Greta Tessing-Ericsson of a psychiatric hospital in Gothenburg have sought an answer to this question, with respect to Sweden, by undertaking a special study of a consecutive series of 100 male patients during 1951. These men were questioned with special reference to homosexual propensities and experiences. That they answered frankly may be assumed from the honesty with which 86 of them admitted to having practiced masturbation at some time or other (the masturbation rate coincided with that of earlier observations). As many as 60 had experienced homosexual invitations or gestures from other persons, but there were only five who admitted to homosexual tendencies or acts in themselves. Even among this small number there were one or two who did not strictly fit into Kinsey's definition of a true homosexual. It may, of course, be objected that males attending a psychiatric clinic are not representative of Sweden as a whole in the matter of homosexuality, and it may well be that other groups in the community will have to be studied before Sweden can claim that Kinsey's findings of homosexuality in 37% of males are not applicable to Swedes. With these reservations Dr. Lindberg and Dr. Tessing-Ericsson conclude that "this investigation undoubtedly shows that we are not entitled without more ado to apply to conditions in Sweden the high frequency rate of homosexuality which Kinsey has found in his material."

Pleurisy Risk After BCG Vaccination.—Two members of the staff of the Serafimer Hospital in Stockholm, Dr. Gunnar Dahlström and Dr. Hans Difs, have undertaken a statistical and follow-up study of recruits found on entering the army to be tuberculin-negative. Among them were 36,235 who were vaccinated with BCG and 25,239 who were not thus vaccinated (BCG vaccination is not compulsory in Sweden as it is in Norway). The two groups were strictly comparable, and the recruits not vaccinated with BCG should therefore serve as controls for the vaccinated group with respect to the subsequent development of tuberculous pleurisy. Exudative tuberculous pleurisy was classified according to whether it was primary or secondary to some other tuberculous lesion. The main interest attached to the primary cases, the secondary cases being numerically insignificant. The cases of pleurisy were also classified according to whether it developed early, before the BCG vaccination could be expected to prove effective, or at a later stage, i. e., 180 days or more after BCG vaccination. During the first of these periods, i. e., up to 180 days after the vaccination, there was no statistically significant difference between the pleurisy rates in the two groups. During the second period there was a statistically significant difference in favor of the vaccinated group. It could be claimed that for the two periods together the pleurisy rate in the BCG group and the control group was 1:2.8, whereas for the period dating from 180 days after vaccination, the difference in favor of the BCG group was as great at 1:5. These findings confirm those published in 1947 by Savilahti, whose material consisted of Finnish recruits belonging to the 1925-1926 classes.

Health Control of Hospital Staffs.—Some time ago a physician on the staff of a large hospital in Lund was appointed personnel medical officer with responsibility for the supervision of the health of the staff. Beds were put at his disposal for acute cases of illness among the staff, and he had to keep a health record of every member of the staff. This system is most useful in preventing the spread of infectious diseases, tuberculosis in particular, and it has been found to be effective in reducing the sickness rate in hospital. With the Lund hospital as an encouraging example, Prof. Sune Genell, in charge of a large hospital in Malmö, tried to reduce his own hospital sickness rate, which was double that of the Lund hospital. From 1949 onward he made a special study of this problem and repeatedly advocated plans for solving it on the Lund hospital lines. His recent resignation from the Malmö hospital was provoked by the passive obstruction he experienced and by his failure to achieve what he considered as a legitimate and much needed reform. In a statement issued to the press, he not only gives particulars about this incident but also discusses the wider aspects of a very old difficulty—that of bringing into line the conflicting interests of physicians and lay administrators.

DENMARK

Services of the Danish Medical Association.—From time to time the headquarters or Central Committee of the Danish Medical Association publishes in its weekly journal a detailed account of the many problems it is called on to solve. This survey is a useful reminder to the members of services rendered. To maintain closer contact with its branches, the association recently canvassed them with regard to the suggestion that it should send one of its staff to attend their meetings. Most of the branches thus canvassed endorsed this suggestion and issued a standing invitation to their meetings.

Here are some samples of the questions the association is expected to answer: One of its branches raised the question of BCG vaccination by nurses instead of by physicians, a choice that the association could not endorse. Another branch wanted to know if health insurance funds should be called on to defray the cost of brassières as if they were bandages. It was ruled that brassières should be paid for in this way only under exceptional circumstances and when there was a medical indication for them. In an open letter to the association a physician complained that its journal had refused to publish an article by him on nature healing and pulmonary tuberculosis. In the reply to his protest he was reminded that the correspondence columns of the journal bore witness to the liberality with which the editor published opinions he did not himself hold. But in this case, the physician had aired his opinions effectively in the daily press, and if everyone were to be given free access to the association's journal, what need was there for a discriminating editor at all? Another physician complained to the association of the numerous and urgent requests he received for the induction of abortion. He wanted to know what might happen to him if he passed on such a request to the police. The association replied that it was not in a position to act as a brake on such requests, which must always be met by scrupulous attention to current regulations. To refer such a request to the police would be illegal.

Another physician asked how he should answer the police when they requested him to hand over certain roentgenograms. He was advised to ask by what right this request was made and to refuse it without the patient's consent unless the police were backed by the law. A less serious problem was raised by another physician, who sent a newspaper clipping showing a parade of doctors and clergymen about to oppose each other in a football match. The physicians were dressed as for an operation. On this cutting was scribbled: "Is it possible?" The association, having weighed the pros and cons carefully, replied that it was possible.

In another case, the Danish public health authorities requested the opinion of the association on a complaint by the Danish Dental Association that certain physicians were devoting most of their time to dental extractions with the use of anesthesia on behalf of dental technicians. The association replied by referring to the law according to which physicians must not practice dentistry as their main occupation if they have not passed special examinations in dentistry. The association warned against such teamwork between physicians and dental technicians. It may be added that the peccant physicians in this affair were not members of the Danish Medical Association. The association is also often called on to give rulings concerning income tax. In one case, for example, a physician disagreed with the income tax authorities over his motoring mileage. How much of it was his private concern and how much a matter of medical practice? To which the association replied that this question is a hardy perennial, the answer to which is: "Keep separate accounts for the two." Another recurrent problem concerns medical certificates, and the latest version of it has to do with pregnant women needing certificates of their pregnancy to give them priority claims on railways and trams. The association did not wish to promote this plan. Many other examples are cited to illustrate the character of the work undertaken by the association on behalf of its members.

CORRESPONDENCE

MISSION MEDICAL SERVICE

To the Editor:—The tremendous physical and human needs of Asia, Africa, the islands of the Southwest Pacific, and the interior of Latin America are still far beyond the resources of all the combined government and private agencies. There is almost an unlimited job to be done. From every corner of the globe come appeals for more medical missionaries. In most areas government attitudes and regulations are favorable; in a few, such as Latin America and Turkey, the conditions of licensure are almost prohibitive; in others, like India, there are signs of relaxing the conditions of professional registration.

Medical missions have always tried to cooperate with the best in government programs. So far as is practicable and without impairing our essential Christian purpose, we wish to assist and supplement the constructive efforts of governments and the World Health Organization. This might be in cooperative planning in hospital facilities for a district or province, acting as the center for a community health program, offering internships to graduates of government medical schools, and other ways. In some areas missions have led the way in special fields, such as leprosy and tuberculosis. This might be extended to the care of the mentally ill and those suffering from chronic incapacitating diseases.

The vast majority of medical missionaries are assigned to general hospitals for general surgical and medical work. These hospitals present a great range in size, and in quality of equipment. Most of them are located in towns, some in small isolated places, and a few in large cities. The bed capacity runs from 50 to 200, with an average of about 70. A considerable majority are fairly modern, having running water, electricity, x-ray machine, a fair laboratory, a well-equipped operating room, and modern hospital beds. Very probably there is a school of nursing, and perhaps a few interns. The trend is steadily toward improvement of the facilities and quality of work.

In a broad sense all of the missionary physician's work should be medically educational. Increasingly in some areas the smaller hospitals are working out ways of cooperating with Christian medical schools. There were nine such schools of medicine in which North American Boards were cooperating, until China was closed and Korea devastated. Now there are three in India and one being planned in the Philippines, with a medical training institute under construction in the Congo. In these institutions and in the larger union hospitals linked to them there is scope for practice of the major specialties—orthopedic, thoracic, and neurological surgery, internal medicine, pediatrics, gynecology and obstetrics, clinical pathology, and the preclinical sciences. There is a steadily growing attention to organized public health —preventive and constructive. School and community health programs have been developed in some areas. For such, a full public health course would be essential; while, for those taking charge of a mission hospital, a short, intensive course, combining public health and tropical medicine, is highly desirable.

The candidate must be a graduate of a Class A medical school. An internship is, of course, essential. This may be a straight internship for the few who are definitely looking forward to a teaching or special assignment. For the majority a one or two-year rotating internship in a hospital with a good educational program is highly desirable. On the whole, the large city or municipal hospital with teaching connections probably offers the best type of service for the prospective medical missionary.

Since most medical missionaries have to do some surgery, and some a considerable amount, with a rather extensive repertoire, it is desirable to secure the advantage of at least a one-year surgical residency, if possible. For those planning to specialize in some particular branch, of course, residency service of three or four years is essential. Internships and residencies on the field are not feasible or desirable. There are very few setups on the field where this would be practicable. Specialty board diplomas are becoming increasingly important for those assigned to medical school faculties, although not yet recognized officially by governments.

The value of a formal course in tropical medicine—long (nine months) or short (four months)—varies with the area to which a doctor is appointed. For service in Central Africa it constitutes "a must." The Belgian government requires it of those assigned to the Congo. For those expecting to serve in subtropical areas, a short intensive course in tropical medicine is highly desirable. Since tuberculosis is a serious problem in most areas special training in this branch would be of great value.

Everyone should secure a license to practice in one or more states. As between state board and national board examinations, the latter are preferable because of the wide application of the diploma here and because it will be more generally recognized abroad, if ever needed.

Ordinarily it is not wise or practicable to concentrate in any one line before going out the first time, but it is desirable to get some work in one or more of the important specialties—obstetrics and gynecology, pediatrics, skin, eye, ear, nose and throat, and orthopedic, thoracic or genitourinary surgery.

Some foreign mission boards or their denominational boards of education have funds from which a limited number of bona fide medical missionary candidates may receive grants ranging from $300 to $800 annually, which the recipient is expected to repay if he does not get out to the field.

With some candidates, debts or heavy insurance obligations are a serious deterrent. The average single salary is about $80 a month, which varies with different boards and in different areas. This is doubled for a married couple. Then there are fairly generous children's and other allowances, which usually permit of a rather comfortable level of living on the field.

The choice of field and final assignment is a resultant of the applicant's preference and the mission board's opinion as to needs and qualifications. The appointing society is genuinely anxious to reconcile the personal wish and the greatest usefulness. One cannot always look forward to being placed in a definite job in a definite place. In some instances it is possible to carry this out, beginning within a year of sailing. In general a missionary is appointed to an area or mission and not to a definite station. The final decision regarding stationing rests with the mission on the field in conference with the individual concerned.

A medical missionary's work should be considered as a life-long service. Temporary work cannot hope to make anything like the contribution that long service can do. The acquisition of the language, knowledge of the people, as well as general and professional experience, all mean greatly accumulating usefulness after the first few years. A few special short-term appointments are occasionally made to meet exceptional situations, but there is no regular provision for such appointments.

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DENIAL OF PSYCHOLOGICAL IMPLICATIONS OF AIR ATTACKS

To the Editor:—In his article "Nature of Air Raid Casualties" (*J. A. M. A.* **147**:858 [Oct. 27] 1951), Dr. Cortez F. Enloe finds it questionable to take protective measures such as psychiatric first-aid stations in case of impending catastrophe. I must contradict this statement and its dangerous implications on the basis of personal experiences. His statement is only relatively true, so far as the immediate impact of initial bombing does not show increase of psychotic reactions. However, this is dependent on the kind of population, the training and preparation of the population, and the skillful training of physicians and psychiatrists to face those catastrophic circumstances. We may expect the following types of reactions:

1. *Anticipatory Fear Reactions.*—Rumors, false alarms, and bad organization of civilian defense may provoke all kinds of panicky reactions. The experiences during the Orson Welles' panic after his broadcast on the "Invasion by Mars" must be impressed deeply on our minds.

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2. *Fear Incubation.*—Many of the fear reactions will come to the fore after the impact of the calamity, sometimes months later.

3. *Paradoxical Fear Reactions.*—The psychoneurosis may occur after the cessation of tension and danger in the period of relative calmness.

4. *Disguised Fear Reactions.*—Disguised fear may deny the existence of psychological implications and manifestations. Fear anticipation and unbearable tension may be expressed in a stream of psychosomatic complaints or in certain unsocial attitudes like apathy, rebellion, escape reactions. Those disguised fear reactions may influence the leaders and their decisions.

5. *The Uncertain Factor of Morale.*—Mass panics occurred during the first and second world wars and will occur during an eventual third world war. It is difficult to determine how strong the emotional backbone of a population is, but, when medical and psychiatric staffs are unprepared for it, the confusion and catastrophe will be greater.

6. *Fear Infection.*—The influence of certain personalities in solo panic may be contagious and disastrous for their environment. They may show the varied symptoms of the battle neurosis. They can be treated instantaneously in order to prevent their influence on others.

7. *Psychiatric First Aid.*—Simple rules about psychiatric first aid under those circumstances are listed in my article in the *American Journal of Psychotherapy* for July, 1951.

Great Britain and Holland—the field of my experience—has shown how well trained and prepared populations and medical staffs can take the catastrophe.

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EUGENIC STERILIZATION, 1950

To the Editor:—Sexual sterilization, as a method of prevention of the transmission of mental deficiency, psychosis, or other hereditary disease, was provided under state laws for 1,526 patients in 1950 (Publication No. 5 of the Human Betterment Association of America, 2 E. 103rd St., New York 29). This is a slight increase over the 1,500 reported in 1949 (J. A. M. A. **144:**783, 1950). The greater frequency of direct inheritance of mental deficiency probably accounts for the fact that the larger proportion, 62%, were for this cause. Mental disease was the chief cause for 34% and other reasons for 3%.

The largest number, 295, was reported by North Carolina, followed by California (275), Georgia (226), Virginia (204), and Iowa (113).

North Carolina was also the leading state when population is considered, with 7.3 eugenic sterilizations per 100,000. The rates for the other states are shown in the chart. States having sterilization laws which were not applied in 1950 are Arizona, Idaho, Mississippi, Montana, Oklahoma, and West Virginia. The average for the 27 states with sterilization laws was 2.5.

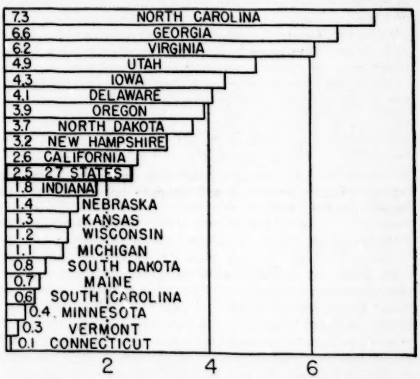
Sterilization of females under the state laws is usually done by salpingectomy. Some laws specify this method; others limit the procedure to one which will not "unsex" the patient. Since the uterus will perform no further useful function in a sterilized woman, Williams, Jones, and Merrill (*Am. J. Obst. & Gynec.* **61:**423, 1951) argue that hysterectomy is to be preferred to simple salpingectomy. They base this on the finding that 24% of 200 patients subjected to salpingectomy later had disorders of the uterus. These did not result from the sterilization but could have been avoided had the protection been given by hysterectomy.

They conclude: "In view of the very low mortality and morbidity resulting from simple hysterectomy in the absence of distortion of pelvic anatomy, it is our impression that hysterectomy rather than tubal interruption should be considered in those individuals with chronic or progressive diseases warranting destruction of the reproductive function. Procedures short of hysterectomy preserve only the menstrual function of the uterus and leave an organ that is, as far as is known, not only worthless, but potentially dangerous."

Dissatisfied with the occasional failure of the Pomeroy and the Madlener methods of salpingectomy, Irving recommended (*Am. J. Obst. & Gynec.* **8:**335, 1924) burying the tips of the uterine portions of the cut tubes in the myometrium. Recently (*Am. J. Obst. & Gynec.* **60:**1101, 1950) he recorded 814 such operations by members of the Boston Lying-In staff with no failures. The article gives excellent diagrams of his technique.

The mortality of human sterilization has recently been discussed by Butler and Gamble (*Am. J. Obst. & Gynec.* **62:**420, 1951). Five deaths, or one in 597, followed 2,984 salpingectomies of mentally deficient persons at the Sonoma State Home. Vasectomy of 2,439 resulted in no mortality. The loss of expected life is calculated to be 17 days for each patient protected. A lower mortality is anticipated in the future.

The accomplishments of sterilization are suggested by a calculation of the cost of keeping in institutions until 1950 the 25,903 mentally deficient persons sterilized under the eugenic laws of 29 states (*Am. J. Ment. Deficiency* **56:**192, 1951). To do this would have required more than 336,000 patient-years and 117 million dollars. From the preinstitutional birth rates of those sterilized in New Hampshire and the proportion of their children found to be feebleminded, it was estimated that those sterilized



Sterilizations reported by state institutions in 1950, per 100,000 population.

in the 29 states would, if unprotected, have produced 19,000 mentally deficient children. Estimated costs and numbers of mentally deficient prevented are given for each state.

Most laws for sterilization of the mentally deficient at governmental expense require a petition followed by consideration of the case by a hospital or eugenics board. A supplementary law in Indiana, passed in 1931 and improved in 1937, is commended by Harshman (*Am. J. Ment. Deficiency* **55:**377, 1951) for its simplification of the necessary procedure. It requires the examining physician to decide whether sterilization is indicated for the welfare of the patient and of society. With this report as a guide, the committing judge may authorize protection from parenthood. Of the sterilizations recommended by the physician, 77% have been authorized by the judge.

Reports from Japan indicate that sterilization is being extensively employed. In 1950, 11,403 such operations were done under the Eugenic Protection Law (*Japan Planned Parenthood Quarterly* **2:**5, 1951). Of these, 273 were compulsorily performed, 85 of them on males. Done at the discretion of the physician were 235 for eugenic reasons, 103 for leprosy, and 10,792 for health causes.

In the first six months of 1951, there were 7,487 sterilizations reported, an increase of 31% over the rate for 1950.

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Rebates: Criteria for Illegality.—This was an action to restrain the defendants, five physicians and a layman, from violating the law regulating the practice of optometry. From a judgment in favor of the defendants, the plaintiff, State Board of Optometry, appealed to the Supreme Court of Arkansas.

Early in 1950 the defendant Keller and five oculists formed a partnership to engage in the wholesaling and retailing of optical supplies and the filling of prescriptions under the name of "The Medical Arts Optical Service." The partnership bought the property and equipment of American Optical Company in Hot Springs, with which Keller had been associated since 1932. The evidence shows, in relation to the operation of the partnership, that the examining oculist would determine any deficiencies in a patient's vision and note on a prescription the type and power of corrective lenses and facial measurements for the correct size of frames. The patient then would take the prescription to the Medical Arts Optical Service, or any other optician of his choice, to be filled. When taken to Medical Arts, Keller displayed different styles of frames to the patient and, where the physician or oculist had requested it, he, Keller, checked or verified the facial measurements. If he discovered what he conceived to be an error, he notified the oculist who, after rechecking, made any corrections necessary. This final decision always rested with the oculist or physician and not with Keller. After final instructions from the oculist, Keller had the lenses ground in accordance with the prescription and affixed to the frame style selected by the customer. All that remained to be done, after actual delivery to the patient, was to see that the glasses fit comfortably, which service Keller performed. In some cases, the bridge pinched or the nose hook needed adjusting, in which event Keller, by bending the offending parts, made it comfortable. The Supreme Court held that the above simple acts which Keller performed did not amount to the "dispensing and adapting of the glasses" and "lenses" within the meaning of the definition of optometry contained in the optometry law. The plaintiff board, however, contended that the defendants were violating the Unfair Practices Act and that the Chancellor who heard the testimony erred in refusing to allow the plaintiff to produce testimony on this issue.

The Unfair Practices Act provides "The secret payment or allowance of rebates, refunds, commissions, or unearned discounts, whether in the form of money or otherwise, or secretly extending to certain purchasers purchasing upon like terms and conditions, to the injury of a competitor and where such payment or allowance tends to destroy competition, is an unfair trade practice and any person, firm, partnership, corporation, or association resorting to such trade practice shall be deemed guilty of a misdemeanor and on conviction thereof shall be subject to the penalties set out in section 11."

The complaint, said the Supreme Court, does not allege that the rebates or "kickbacks" were "not extended to all purchasers purchasing upon like terms and conditions, to the injury of a competitor." In fact, the Supreme Court continued, the complaint in effect alleges the contrary. The partnership contract was made a part of the plaintiff's complaint and this agreement specifically provided that "the partnership shall maintain an establishment list of wholesale prices, subject to change from time to time, and shall charge a standard dispensing fee for filling prescriptions. Customers having prescriptions filled shall be charged a retail price to be established by agreement among the partners. The difference between the wholesale price plus dispensing fee and the retail price shall be credited to the oculist making the prescription. Such credit balance due oculists shall be paid by the partnership monthly. The privilege of participating in such retail profits shall be open to all licensed oculists and shall not be restricted to the partners." In construing this statute, the Supreme Court, in a prior case, said "But the regulatory law . . . does not forbid all rebates, nor does it make illegal all agreements for rebates. Before any agreement for a rebate can be said to violate the provisions of this act, such rebate must: First, be secret; second, not be paid to all patrons upon like terms and conditions; and third, must tend to destroy competition. It devolved upon appellee to show that all these requisites of illegality existed." We hold, concluded the Supreme Court, that the plaintiff board failed to state a cause of action against the defendants on this issue of rebates and therefore the Chancellor did not err in refusing to hear testimony on this point. Accordingly the judgment of the trial court denying the plaintiff's request for an injunction was affirmed.—*Arkansas State Board of Optometry v. Keller, 239 S.W. (2d) 14 (Arkansas, 1951).*

Workmen's Compensation Act: Employee's Right to Sue for Malpractice.—The plaintiff sued to recover damages alleged to have resulted from the malpractice of the defendant physician. From a judgment in favor of the defendant, the plaintiff appealed to the Appellate Court of Illinois.

The plaintiff sustained an injury in the course of his employment with the Pinckneyville Mining Company, for which he made a settlement under the Workmen's Compensation Act prior to the filing of this action. The evidence showed clearly that both the employer and the employee were operating under the provisions of the Workmen's Compensation Act. The evidence further showed that the defendant was also under and subject to the Act. The defendant therefore moved for dismissal on the ground that the plaintiff had no legal capacity to sue.

Section 29 of the Illinois Workmen's Compensation Act provides that where all the parties are under and subject to the Act, the plaintiff employee has no right of action as against the negligent third party and his right of action is transferred to his employer. It appears from the record that a compensable injury under the Workmen's Compensation Act was alleged to have been aggravated by the negligence of the physician of the employer. Such aggravation, said the appellate court, was not a new injury but was connected with and became a part of the original injury. The employer is bound to pay under the Workmen's Compensation Act for the original injury and all additional disability caused by the malpractice under the authority of the cases determined in this State. It is therefore apparent from the record that the plaintiff, plaintiff's employer, and defendant, were all under the Workmen's Compensation Act and that Section 29 of this Act applies to the alleged malpractice of the defendant. Under said Section 29 the plaintiff's cause of action as against defendant is transferred to the employer of the plaintiff, and since the plaintiff did not have the legal capacity to sue, the order of dismissal entered by the trial court was proper. Accordingly the judgment of the trial court in favor of the defendant physician was affirmed.—*Duvardo v. Moore, 98 N.E. (2d) 855 (Illinois, 1951).*

MEDICAL MOTION PICTURES

Trick and Fancy Roping: 16 mm., color, sound, showing time 10 minutes. Produced in 1951 by and procurable from Vernon J. Kraft Film Productions, Milwaukee.

This film pictures the technic of plain and trick roping as it can be taught to children in schools and to patients in need of rehabilitative exercise. An important part of the film is devoted to a demonstration of a simple way to make a rope for roping. It is remarkable for the appealing way in which colorful outdoor backgrounds and cheerful characters are used to engage the attention of the audience. Human interest is added by the story of a victim of poliomyelitis who made roping his hobby; this suggests many possibilities in educational and rehabilitative programs. It is recommended for nonprofessional audiences of any age and for students of physical education and therapeutic exercise.

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MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Neurology and Psychiatry, Chicago

66:253-402 (Sept.) 1951

New Concept of Critical Steps in Course of Chronic Debilitating Neurologic Disease in Evaluation of Therapeutic Response: Longitudinal Study of Multiple Sclerosis by Quantitative Evaluation of Neurologic Involvement and Disability. L. Alexander.—p. 253.
*Inheritance of Manic-Depressive Psychosis. D. J. Merrell.—p. 272.
Psychoanalysis and Dynamic Psychiatry. M. Gitelson.—p. 280.
Supplementary Motor Area of Cerebral Cortex: Clinical and Experimental Study. W. Penfield and K. Welch.—p. 289.
Antidepressive Action of 5-(1,3-Dimethylbutyl)-5-Ethylbarbituric Acid. J. S. Gottlieb.—p. 318.
Central Nervous Action of Hydantoins, Oxazolidinediones and Thiazolidones. G. Chen, C. R. Ensor and I. G. Clarke.—p. 329.
Ophthalmoplegia Internuclearis Anterior Without Lesion of Posterior Longitudinal Bundle. M. J. Madonick.—p. 338.
Hereditary Spastic Paraplegia and Hereditary Ataxia: Family Demonstrating Variety of Phenotypic Manifestations. W. M. Landau and J. J. Gitt.—p. 346.
Patterns in Perception on Simultaneous Tests of Face and Hand. M. B. Bender, M. Fink and M. Green.—p. 355.
Capillaroscopic Studies in Cases of Multiple Sclerosis and Other Neuropsychiatric Disorders. N. Mutlu.—p. 363.

Inheritance of Manic Depressive Psychosis.—The role of heredity in the etiology of manic-depressive psychosis has often been investigated, but the results have given rise to a variety of interpretations. From annual reports of the Bureau of Census Merrell deduces that manic-depressive psychosis is less common than formerly. This may be explained by the tendency to define manic-depressive psychosis more narrowly, so that disorders formerly diagnosed as manic-depressive psychosis now appear to be classified as schizophrenic, or perhaps involutional, psychoses. Figures on discharges and readmissions confirm the cyclic nature of the psychosis. Evidence that women are more severely affected than men is to be found in the earlier age of onset and of first admission and in the greater proportion of affected women. Data on twins show conclusively that heredity is involved in the etiology of the psychosis. The high incidence among the relatives of persons with this psychosis and the difference in frequency of the psychosis in different populations are further evidence for the role of heredity. The frequency of the psychosis is about the same among the parents, sibs, fraternal twins, and children of patients with manic-depressive psychosis. The best genetic explanation for the data is that of a single autosomal dominant gene with incomplete penetrance.

A.M.A. Arch. Otolaryngology, Chicago

54:231-340 (Sept.) 1951

Influence of Fundamental Concepts in Allergy upon Specific Problems in Otolaryngology. F. L. Weille and A. B. Richards.—p. 231.
Malformations of Eustachian Tube, Middle Ear, and Its Appendages: Critical Review. F. Altmann.—p. 241.
Physical and Physiological Variables in Noise-Induced Hearing Loss. D. Wheeler.—p. 267.
Vocal-Cord Paralysis in Heart Disease. M. Plotz and M. J. Brooks.—p. 273.
*Prevention of Otitis in Swimmer. W. V. Hostelley.—p. 279.
Future of Otolaryngology: President's Address. S. L. Shapiro.—p. 304.

Prevention of Otitis in Swimmers.—When water enters the external ear canal in a swimmer it may produce external otitis, or if the tympanic membrane is perforated, otitis media. The following factors predispose to such infections: (1) man's lack of biological adaptation to an aquatic environment, i. e., his inability to close the external ear or nares to prevent entrance of water into the ear canal or middle ear, (2) the ability of water to remove the protective mantle of fatty acids from the skin of the canal with consequent elevation of the surface pH from the normal bacteriostatic level of 5.5, (3) irritation of the skin and mucous membranes by chemicals used for purification of the water, (4) the presence of bacteria or molds in the water or in the ear canal, (5) chilling of the body surface, which lowers resistance to the organisms present. Water may be prevented from coming in contact with the nasal mucous membranes and from thence with the middle ear by a proper method of breathing and by use of a nasal clip. It can be excluded from the ear canal by the use of ear plugs made from nonabsorbent cotton, i. e., a form of cotton that has been sterilized but from which the oil has not been removed. It is water-repellent and forms an efficient, nontraumatic cork in the ear canal against the entrance of water. If about four drops of a 25% m-cresylacetate-chloroazodin solution (one part of m-cresylacetate to three parts of chloroazodin in glyceryl triacetate) is placed into each ear and a tight warm plug of nonabsorbent cotton that conforms to the shape of the ear canal is inserted, the result is both a protection against cold water coming into contact with the canal or middle ear and an oily antiseptic, which guards the skin and tends to kill any offending organism that might be activated by the water or brought into the ear in the water. Six cases are reported in which this method proved highly effective. One part m-cresylacetate was used in cases of a mild nature or when the solution was to be used frequently for swimming over short periods of time. Two parts m-cresylacetate were used in the severer infections or when the solution was not to be used too often.

American Journal of Medical Sciences, Philadelphia

222:243-364 (Sept.) 1951

*Synergistic Action of Para-Aminobenzoic Acid and Cortisone in Treatment of Rheumatoid Arthritis. L. L. Wiesel, A. S. Barritt and W. M. Stumpe.—p. 243.
Acute Nonspecific Pericarditis. E. W. Gilley, M. C. McCord and J. T. Taguchi.—p. 249.
Relation of Kidney to Acute Pressor Action of Desoxycorticosterone. M. L. Goldman, J. T. Kriss, H. A. Schroeder and D. F. Davies.—p. 257.
Significance of QT Prolongation in Electrocardiogram: Based on Study of 168 Cases. S. Bellet and D. Finkelstein.—p. 263.
Thrombin-Inhibitory Effect of Certain Thromboplastin Preparations. R. C. Hartmann.—p. 279.
Studies on Chloramphenicol in Treatment of Typhoid Fever. P. T. Lantin, E. L. Gamboa and F. Sadili.—p. 285.
*Recovery of Virus from Regional Lymph Nodes of Fatal Human Cases of Poliomyelitis. H. A. Wenner and E. F. Rabe.—p. 292.
Pathogenesis of Muscle Necrosis Due to Experimental Local Cold Injury. R. B. Lewis.—p. 300.
Response of Patients with Malignant and Benign Pemphigus to Adrenocorticotropic Hormone and Cortisone. C. N. Frazier, W. F. Lever and C. S. Keuper.—p. 308.
Fibrous Displasia of Bones. J. E. Pritchard.—p. 313.
Whooping Cough and Its Epidemiological Anomalies. J. E. Gordon and R. I. Hood.—p. 333.

Synergistic Action of *p*-Aminobenzoic Acid and Cortisone in Rheumatoid Arthritis.—The fact that the inactivation of estrogenic hormones by the liver is inhibited by the addition of *p*-aminobenzoic acid, the great similarity in structure of cortisone and the estrogens, and the fact that the major portion of parenterally administered cortisone is inactivated in the body suggested the possibility of inhibiting the destruction of cortisone by the simultaneous administration of *p*-aminobenzoic acid. The 15 patients treated by this method all had rheumatoid arthritis that had proved refractory to other treatment. In the first of the two methods used, patients received full dosage schedules of cortisone acetate until maximum relief of arthritis was obtained, usually for one week, after which the daily intramuscular dose of cortisone was reduced to 25 mg. With this dose, all patients relapsed within a short time. Then the sodium salt of *p*-aminobenzoic acid was given orally in doses of 1.5 gm. every two

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An asterisk (*) before a title indicates that the article is abstracted.

hours during the waking period for a total of eight doses, or 12 gm. per day, in addition to the single daily intramuscular injection of 25 mg. of cortisone acetate. When the arthritic manifestations had again been relieved, for variable periods of time, control tests were made by the substitution of a placebo for the cortisone. In the second method, patients were given from the start the combination of cortisone acetate and sodium *p*-aminobenzoate. The results obtained with these two methods were comparable with those obtained by administration of much larger doses of cortisone alone, with the additional advantage of a reduction in side reactions. The additive or synergistic action of these two compounds warrants further and more extensive use of this method in rheumatoid arthritis.

Virus in Regional Lymph Nodes in Poliomyelitis.—A review of previous studies indicates that poliomyelitis virus can be found only irregularly in the regional lymph nodes. The authors of this report performed necropsies on nine patients who died of poliomyelitis and found the virus in the lymph nodes in six. The right axillary lymph nodes were positive in two individuals, the left axillary lymph nodes in three, the right inguinal lymph nodes in two, and the left inguinal lymph nodes in two. Poliomyelitis virus was found once in mesenteric lymph nodes. The pancreatic tissues obtained in these nine cases did not contain detectable amounts of poliomyelitis virus. It is assumed that, during the invasive period, poliomyelitis virus extends from the gastrointestinal tract into lymphatic channels, with outflow into the blood stream and interstitial tissue spaces. From these compartments virus is transported to lymph nodes, where it may be detectable for a period after the stage of viremia.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

66:341-520 (Sept.) 1951

Superior Vena Cava and Innominate Veins: Angiocardiographic Study. D. J. Roberts Jr., C. T. Dotter and I. Steinberg.—p. 341.
Normally Situated Arch of Azygos Vein: Its Roentgenologic Identification and Catheterization. H. M. Stauffer, J. LaBree and F. H. Adams. —p. 353.
Roentgenographic Features of Slipped Capital Femoral Epiphysis. A. Klein, R. J. Joplin, J. A. Reidy and J. Hanelin.—p. 361.
Roentgenological Identification of Victims of the "Noronic" Disaster. A. C. Singleton.—p. 375.
*Osteitis Pubis and Its Treatment by Roentgen Irradiation. T. Leucutia. —p. 385.
*Malignant Testicular Tumors: Clinical and Therapeutic Evaluation of 158 Cases. G. Kaplan, B. B. Cohen and B. Roswit.—p. 405.
Reaction of Tissues of Amphibians After Local Roentgen Irradiation. V. V. Brunst, D. J. Barnett and F. H. J. Figge.—p. 420.
Training of Residents in Radiology. B. R. Kirklin.—p. 435.
Training of Residents in Roentgen Diagnosis. L. G. Rigler.—p. 438.
Residency Training in Clinical Therapeutic Radiology. D. Quick.—p. 447.
Teaching of Radiological Physics as Part of Training in Radiology. E. H. Quimby.—p. 453.

Osteitis Pubis.—Osteitis pubis is a distinct clinical entity characterized by self-limiting, nonsuppurative osteonecrosis, which usually begins at the symphysis and extends to the pubic bones or, in the severer cases, as far posteriorly as the ischial tuberosities. Of the 116 cases listed in literature, 33 were reported from 1924 to 1946, while 83 were reported from 1947 to 1950. To these, four personal cases were added by the author. The recent sudden increase in the number of cases must be attributed to a better diagnostic evaluation and especially an intensified search for osteitis pubis, which is to be considered as a potential postoperative complication of urological surgical intervention. Osteitis pubis occurred as an aftermath of suprapubic prostatectomy in 68 of the 116 reported cases and as a complication of retropubic prostatectomy in 29. It was observed in only seven cases of transurethral prostatectomy and rarely after other operations in which the bladder was opened suprapubically. It is not presumed to follow uncomplicated perineal prostatectomy. The cases in which osteitis pubis was reported secondary to nonurological surgical intervention, such as herniorrhaphy or symphysiotomy, were nearly all cases of frank osteomyelitis or osteitis pubis complicated by osteomyelitis. The two outstanding criteria of differentiation from osteomyelitis pubis are fever and sequestration, both of which are present in osteomyelitis and absent in osteitis. Occasional cases of osteitis pubis have also been described following external trauma to the pubic region, pyelonephritis, and other nonsurgical causes. Its clinical features are excruciating pain, tetanic contractions of the muscles that pull on the involved portions of the bone, and in many instances complete disability lasting for many months. The roentgenologic features differ according to whether the disease is in the prodromal, destructive, or regenerative stage. The appearance is characteristic and constitutes the most important objective sign in establishing a correct diagnosis. The prognosis of osteitis pubis is invariably good. There is no mortality, and the healing is complete. In the five presumably fatal cases listed in literature it is more probable that death resulted from the severe infection, which arose from some other source than the osteitis pubis. Treatment is symptomatic and supportive. Its aim is to alleviate the pain and to shorten the self-limited clinical course. Roentgen therapy, either alone or in combination with other methods, accomplishes both. The author recommends that focal doses of 75 to 100 r be given at triweekly intervals with 200 kv., 1 mm. Cu, until the acute symptoms have subsided, and at gradually spaced intervals thereafter. A complete reossification of the bone occurs within one to two years.

Malignant Testicular Tumors.—During the 15 year period of 1933 to 1948, a total of 158 patients with malignant testicular tumor were treated and observed in the radiation therapy department at the Veterans Hospital, Bronx, New York. Of the 158 patients, 58 had seminoma, 58 embryonal carcinoma, 24 teratocarcinoma, and 10 choriocarcinoma. Of the remaining eight, there were two with reticulum cell sarcoma, one with lymphosarcoma, one with rhabdomyosarcoma, and four in whom the diagnosis was undetermined, because preoperative irradiation obscured the histopathological picture. All the patients were white, although 12% of the hospital population was Negro. All but 1 of the 158 patients were treated by surgical removal of the diseased testicle followed by deep roentgen therapy to the regional lymph nodes in the abdomen. Radiation therapy was given whether or not there was clinical evidence of metastases to the abdominal lymph nodes. In cases of seminoma, as a rule a tumor dose of about 2,000 r was delivered to the lymph node areas in the abdomen. There were wide variations in the irradiation response of seminoma, ranging from complete regression following small doses to persistence and recurrence of the malignant tumor despite intensive irradiation therapy. Some radioresistant seminomas may not respond to tumor doses appreciably higher than 2,000 r. In other histopathological types the tumor dose was approximately 3,000 r. The highest percentage of three-year survival periods was achieved in the seminoma group. The percentage of three-year survival periods in histopathological types other than seminoma was greatest in the embryonal carcinomas, less in the teratocarcinomas, and least in the choriocarcinomas. In each histopathological group the presence or absence of clinical metastasis was important in the prognosis. In seminoma it was noted that, of 22 patients who had no clinical evidence of metastases, 13 survived the three year period. Of 27 patients in the other groups who had no clinical metastases when first seen, 18 survived the three year period. All of the deaths occurred within the first three years following treatment. Hence, the chance of continued survival is excellent after the three year period.

American Review of Tuberculosis, New York

64:225-326 (Sept.) 1951

*Evaluation of Role of Serial Chest Roentgenograms in Estimating Progress of Disease in Patients with Pulmonary Tuberculosis. J. Yerushalmy, L. H. Garland, J. T. Harkness and others.—p. 225.
Clinical Importance of Lesions Undetected in Mass Radiographic Survey of Chest. H. B. Zwerling, E. R. Miller, J. T. Harkness and J. Yerushalmy.—p. 249.
Analysis of Ventilatory Defect by Timed Capacity Measurements. E. A. Gaensler.—p. 256.
Some Effects of Adrenocorticotropic Hormone and Cortisone on Pulmonary Function of Patients with Obstructive Emphysema. D. S. Lukas. —p. 279.
*Evolution of Tuberculous Lesions in Guinea Pig During Administration of Adrenocorticotropic Hormone (ACTH) or Cortisone. C. LeMaistre and R. Tompsett.—p. 295.
Disappearance of Tubercle Bacilli from Sputum Following Thoracoplasty. R. T. Polack and W. F. Fidler.—p. 307.

Interpretation of Serial Chest Roentgenograms in Pulmonary Tuberculosis.—Because of the assumption that it is possible to assess with a great degree of reliability the "activity" of a lesion from a comparison of two or more roentgenograms of the chest obtained at appropriate intervals, 150 pairs of 14 by 17-

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inch films of the chest of 150 patients with pulmonary tuberculosis, taken approximately three months apart, were studied. These two single posteroanterior roentgenograms of the chest were interpreted independently twice by each of three radiologists and three phthisiologists of considerable experience in their respective specialties. The main observation was that in judging a pair of films for evidence of progression, regression, or stability of disease in patients with pulmonary tuberculosis, two readers are likely to disagree with each other in almost one-third of the cases, and a single reader is likely to contradict himself in approximately one-fifth of the cases. A significant but relatively small part of the error in film interpretation results from variations in technical factors. Disagreements in serial film interpretations are not due chiefly to contradictory evidence produced by the two lungs in film pairs. On the contrary, a reader disagrees with himself or with another reader almost as often in evaluating changes in a unilateral as in a bilateral lesion. When a reader compares a pair of roentgenograms and classes one as more abnormal than the other, the chances are that in approximately 10% of the cases another reader will make the opposite interpretation; and the same reader is likely to completely reverse his original diagnosis in approximately 7% of readings of the same pairs of films. Results to be expected when two readers interpret a set of 100 film pairs and when the set is interpreted independently twice by the same reader are summarized. The inconsistencies in roentgenographic interpretations revealed by the authors' studies do not mean that roentgenograms are not useful, but they must not be taken as the sole criterion of the patient's progress, nor should clinical decisions rest on them alone. Additional procedures, such as multiple projections and fluoroscopies, may add to the reliability of roentgenographic evaluation, and physical examination and bacteriologic studies will reduce wrong diagnoses or prognoses.

Corticotropin and Cortisone in Guinea Pigs with Experimental Tuberculous Infection.—Excessively large amounts of corticotropin (ACTH) or cortisone were administered subcutaneously to two groups of albino guinea pigs. Forty-eight hours after the administration of the drugs was started each animal was infected subcutaneously over the sternum with an inoculum of virulent Mycobacterium tuberculosis. Drug administration was continued in one group of guinea pigs for 14 days and in the other group for 28 days, at which time all surviving animals were killed and necropsy was performed. The effects of corticotropin and cortisone were most evident in the experimental infection of 14 days' duration. The characteristics of the nodule at the inoculation site were definitely altered. Formation of such a nodule was noted, however, in only one-half of the cortisone-treated animals, whereas a nodule formed in all of the animals that received corticotropin. Demonstrable involvement of the various organs by the tuberculous process was less frequent in the animals given cortisone or corticotropin than in the control animals, which received only isotonic sodium chloride solution. The effects of corticotropin or cortisone were less pronounced in the infection of 28 days' duration. In the longer experiment the formation of a nodule containing caseation necrosis occurred in all animals, irrespective of the substance administered. The extent of the tuberculous process in all animals was approximately the same. Significant differences in the animals given cortisone, corticotropin or isotonic sodium chloride solution, in terms of the number of acid-fast bacilli present in the lesions, were not demonstrable on microscopic examination of the tissues. During the periods in which excessively large amounts of corticotropin or cortisone were administered, evidence of enhancement of the experimental tuberculous process induced by cortisone or corticotropin was not obtained.

Arizona Medicine, Phoenix

8:1-84 (Sept.) 1951

*Clinical Application of Cortisone and ACTH in Arthritis and Related Conditions: Methods and Problems. Part II: Side-Effects, Complications, Contraindications, Precautions and Conclusions. O. Steinbrocker, M. E. Ehrlich, M. Silver and others.—p. 29.

Side-Effects of Corticotropin and Cortisone in Arthritis.—Of 140 patients, 72 with rheumatoid arthritis, 27 with rheumatoid-like articular diseases, and 41 with nonrheumatoid musculoskeletal conditions, treated with cortisone and corticotropin (ACTH), in somewhat less than one-third side-effects or untoward reactions developed. Approximately 90% of these side-effects were temporary, quickly reversible on discontinuance of therapy, or of no clinical importance. Glycosuria occurred in 18 patients, edema in 16, and rounding of facial and body contours in 12. Cutaneous side-effects, occurring in 30 patients, included hirsutism, acneform lesions, erythematous eruptions, and purpuric eruptions. Psychic disturbances appeared in 24 patients. Untoward cardiovascular and peripheral vascular manifestations were observed in 15 patients, all but 1 between the ages of 60 and 80. In seven patients thrombophlebitis developed. Six patients exhibited signs and symptoms of a variety of neuropathies. Decalcification of bone or aggravation of preexisting osteoporosis led to a compression fracture of the 11th dorsal vertebra in one patient and to a fracture of the surgical neck of the humerus in another. The vascular complications, the fractures, the psychoses, and the neuropathies were the most troublesome and necessitated interruption of treatment oftenest. The wide variety of actions of cortisone and of corticotropin other than the useful therapeutic effects makes it necessary to administer them with caution. Hospitalization is recommended for the initial period and is imperative for elderly patients and those with coincidental disease. The presence of relative contraindications to the use of these compounds must be weighed carefully against their expected benefit in each case. A balanced final appraisal of their role as practical therapeutic agents, particularly in relation to long-term administration in chronic, musculoskeletal disease, must await further data on the range of clinical effects and possible pathological changes produced by these substances in larger groups of patients during longer periods of observation.

Diseases of Chest, Chicago

20:237-346 (Sept.) 1951

*Early Diagnosis of Primary Lung Cancer by Cytologic Methods. S. M. Farber, A. K. McGrath Jr., M. A. Benioff and L. W. Espen.—p. 237.
*Carcinoma of Lung: Duration of Life of Individuals Not Treated Surgically. A. Buchberg, R. Lubliner and E. H. Rubin.—p. 257.
False Positive Bacteriological Reports in Diseases Simulating Pulmonary Tuberculosis. D. Steinberg, P. C. Holzberger and G. Schwartz.—p. 277.
Cor Pulmonale: Report of Additional 52 Cases Compared with Previous Study of 50 Cases. H. A. Zimmerman and J. M. Ryan.—p. 286.
Diagnosis and Treatment of Carcinoma of Esophagus. P. Thorek.—p. 290.
Simple Method for Differential Block-Inflation in Anesthesia for Lung Surgery. S. Albert.—p. 304.
Tuberculous Tracheobronchitis: Review of 100 Cases. J. E. Hiltz, D. M. MacRae and J. J. Quinlan.—p. 313.
Further Studies on Control of Vestibular Toxic Effects of Streptomycin by Dramamine. L. L. Titche and A. Nady.—p. 324.
Spontaneous Pneumothorax Due to Diaphragmatic Defect Complicating Pneumoperitoneum Therapy: Report of Case. I. Epstein.—p. 327.

Early Diagnosis of Primary Lung Cancer.—Cytological studies were made of 6,281 specimens of sputum or bronchial secretion obtained from 2,066 patients with chest diseases in whom malignancy was suspected. Of the 2,066 patients, 1,208 had benign chest disease, but in many of these patients the clinical picture of lung carcinoma was simulated by the benign pulmonary conditions. Of the 858 patients with malignant chest diseases, 241 had pathologically proved bronchogenic carcinoma. A positive cytological diagnosis was made in 55% of these patients. When five or more sputum specimens were studied, an accuracy of 90% was reached. At the same time only two false positive diagnoses were made in the first 500 patients studied. In 113 (47%) of the 241 patients with pathologically proved bronchogenic carcinoma, cytological diagnosis was the first procedure to establish a morphological diagnosis; in 111 patients (46%) the positive cytological diagnosis coincided with other ordinary methods in establishing a morphological diagnosis; and in only 17 patients (7%) the positive cytological diagnosis was reported after diagnosis had been established by another pathological method. In these 241 patients a positive cytological diagnosis thus was made oftener and sooner than other morphological diagnoses. The authors believe that earlier diagnoses of cancer of the lungs will be made when cytological techniques are immediately applied to all patients suspected of having carcinoma, to patients with equivocal lung lesions detected by routine roentgen surveys, and as a routine screening procedure to selected patients with cough and sputum.

Survival Period of Patients with Lung Cancer.—Of 443 patients with microscopically proved bronchiogenic carcinoma not operated on, 373 (84.2%) died within two years of the onset of striking symptoms. The remaining 70 (15.8%) lived from two to seven and a half years. This group included 18 who lived three to five years and 7 who lived five years or longer. An additional patient is reported who lived more than 17 years from the time the diagnosis of carcinoma was made. Microscopic studies of sections obtained from 320 patients on whom necropsy was performed showed that the average length of life was longest (14.1 months) in 122 patients with epidermoid carcinoma and shortest (11.4 months) in 72 patients with anaplastic carcinoma, while 126 patients with adenocarcinoma occupied an intermediate position, with a survival period of 13.6 months. As a clinical corollary of this study, and on the basis of an analysis of the results of surgical treatment in 1,251 patients reported from 10 large centers of the United States and England, it is concluded that resectional surgery should be restricted to patients in good physical condition in whom the disease has been detected in a relatively early stage. Surgery is contraindicated in patients with advanced bronchiogenic carcinoma because of the considerable operative risk and the discouragingly poor results. Such patients should not be subjected to surgical intervention on the principle that nothing is lost by the attempt since death is a matter of a few months in any event. The authors' observations in the 443 patients not treated surgically revealed that an appreciable number of patients with bronchiogenic carcinoma lived two years or longer without surgical treatment.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

4:1-208 (Sept.) 1951

Varicose Veins. S. A. Eger and F. B. Wagner Jr.—p. 32.
Surgery in Pediatrics. A. A. Schaefer.—p. 41.
What to Know About Drug Addiction. H. Isbell.—p. 45.
Squints in Children. W. H. Fink.—p. 53.
Obstetric Anesthesia. J. S. Lundy and E. A. Banner.—p. 63.
Advantages of Microthermy. E. Matlin.—p. 67.
Management of Glomerulonephritis. H. A. Lindberg.—p. 70.

Iowa State Medical Society Journal, Des Moines

41:381-412 (Sept.) 1951

Severe Injuries to Hand. W. C. Graham.—p. 381.
Serious Ankle Fractures. R. M. Wray.—p. 383.
Problems in Management of Diabetes Mellitus. T. L. Carr.—p. 388.
Present Status of Psychiatry in Iowa. W. R. Miller.—p. 392.

Journal of Experimental Medicine, New York

94:171-274 (Sept.) 1951

Electron Microscope Study of Red Cell Membranes After Experimental Infection with Virus of Foot-and-Mouth Disease. B. Epstein, N. M. Fonseca and E. De Robertis.—p. 171.
First Two Steps of Invasion of Host Cells by Bacterial Viruses. II. A. Garen and T. T. Puck.—p. 177.
Mechanism of Production of Pulmonary Lesions in Mice by Newcastle Disease Virus (NDV). H. S. Ginsberg.—p. 191.
*Half-Life of Passively Acquired Antibody Globulin Molecules in Infants. A. S. Wiener.—p. 213.
Anemia Plus Hypoproteinemia in Dogs: Various Proteins in Diet Show Various Patterns in Blood Protein Production. G. H. Whipple and F. S. Robscheit-Robbins.—p. 223.
Inhibition of Escherichia Coli by *p*-Aminobenzoic Acid and Its Reversal by *p*-Hydroxybenzoic Acid. B. D. Davis.—p. 243.
Observations with Electron Microscope on Solvation and Reconstitution of Collagen. P. Vanamee and K. R. Porter.—p. 255.

Half-Life of Passively Acquired Antibody Globulin Molecules in Infants.—In this study on the half-life of the antibody molecule in man, Wiener took advantage of a situation existing in certain cases of isosensitization in pregnancy. When a sensitized Rh-negative woman carries an Rh-negative fetus, the Rh antibodies in her circulation pass through the placenta into the fetus until an equilibrium exists between the two circulations, so that when the baby is born its plasma contains Rh antibodies equal in titer to the "univalent" Rh antibodies in the maternal plasma. From the curve of elimination of the Rh antibodies in the newborn baby's plasma, it should be possible to estimate the half-life of the Rh antibody molecule in the baby's body. By following the titer of passively acquired Rh antibodies in newborn infants, the author calculated that the half-life of the placenta-passing Rh antibody molecule is approximately 30 days. Evidence is offered that this estimate applies not only to placenta-passing Rh antibodies, but also to other placenta-passing antibodies, and not improbably to serum gamma globulin molecules in general. Studies on the fate of free Rh antibodies in erythroblastotic babies show that these antibodies often are eliminated no more rapidly in Rh-positive babies than in Rh-negative babies. On the other hand, incompatible alpha and beta antibodies, as a rule, are quickly neutralized and eliminated from the body of newborn infants. These observations provide one explanation for the lower incidence of erythroblastosis due to A-B sensitization in comparison with cases resulting from Rh sensitization.

Journal of Immunology, Baltimore

67:1-92 (July) 1951

Studies on Immunization of Guinea Pigs and Mice to Brucella Infection by Means of "Native Antigen." S. Elberg, M. Herzberg, P. Schneider and others.—p. 1.
Zone of Localization of Antibodies: XI. In Vivo Purification of Kidney-Localizing Anti-Kidney Antibody. D. Pressman and B. Sherman.—p. 15.
Id.: XII. Immunological Specificities and Cross Reactions in Vascular Beds of Liver, Kidney and Lung. D. Pressman and B. Sherman.—p. 21.
Heterologous Strain Immunity in Experimental Syphilis. H. J. Magnuson and F. A. Thompson Jr.—p. 35.
Relationship Between Treponemal Immobilizing Antibodies and Acquired Immunity in Experimental Syphilis. H. J. Magnuson, F. A. Thompson Jr. and C. P. McLeod.—p. 41.
Serological Group II of Proteolytic Clostridia. J. W. Mandia.—p. 49.
Effect of Antilymphocytic Serum on Circulating Antibody Levels. M. F. A. Woodruff, B. Forman and K. B. Fraser.—p. 57.
Changes in Properties of Coagulase-Reacting Factor of Plasma After Separation from Prothrombin by Seitz Filtration. M. Tager and A. L. Lodge.—p. 63.
Surface Phagocytosis in Vivo. M. R. Smith, W. D. Perry, J. W. Berry and W. B. Wood Jr.—p. 71.
Purification and Concentration of Mouse Encephalomyelitis Virus by Hemagglutination. O. Lahelle and T. G. Ward.—p. 75.
Alternate Passage of Influenza Virus: Comparison of Effects of Serial Passage and Alternate Passage of Type B Influenza Virus in Hamsters. F. M. Davenport.—p. 83.

67:93-172 (Aug.) 1951. **Partial Index**

Studies on Specific Soluble Protein of Pasteurella Pestis and Allied Organisms: I. Isolation, Fractionation and Certain Physical, Chemical and Serological Properties. S. C. Seal.—p. 93.
Antigenic Composition of Cryptococcus Neoformans: II. Serologic Studies with Capsular Polysaccharide. E. E. Evans and J. F. Kessel. —p. 109.
Factors Influencing Agglutination Titration in Human Brucellosis. R. J. Finberg and G. G. Wright.—p. 115.
Metabolic Studies of Rickettsiae: I. Effects of Antimicrobial Substances and Enzyme Inhibitors on Oxidation of Glutamate by Purified Rickettsiae. C. L. Wisseman Jr., E. B. Jackson, F. E. Hahn and others. —p. 123.
Effect of BCG Vaccination and Chemotherapy on Experimental Tuberculosis in Mice. C. O. Siebenmann.—p. 137.
Size of Coxsackie Viruses and Lansing Poliomyelitis Virus Determined by Sedimentation and Ultrafiltration. J. L. Melnick, M. Rhian, J. Warren and S. S. Breese Jr.—p. 151.

Journal of Infectious Diseases, Chicago

89:1-106 (July-Aug.) 1951. **Partial Index**

Active Immunization of Birds Against Malaria. G. S. Coffin.—p. 1.
Distribution of Sparing and Protective Factors in Plasma Fractions of Ducks Recovered from Lophurae Malaria. E. R. Becker, T. M. Schwink and C. E. Brodine.—p. 16.
Effect of Cortisone Acetate on Experimental Purulent Infectious Arthritis of White Mice. H. Friedlander.—p. 26.
Coproagglutinins in Ulcerative Colitis. W. L. Barksdale, A. Ghoda and K. Okabe.—p. 47.
Effects of Brucellergen Skin Test on Brucella Agglutinin Titer in Patients with Brucellosis and Other Diseases. H. S. Krakauer, R. Rachman and E. Neter.—p. 56.
Action of Some Water-Soluble Carcinogens on Bacteria. A. Brown. —p. 59.
Studies on Pathology and Pathogenesis of Experimental Brucellosis: I. Comparison of Pathogenicity of Brucella Abortus, Brucella Melitensis, and Brucella Suis for Guinea Pigs. A. I. Braude.—p. 76.
Hemagglutinin-Inhibiting Property of Duck Plasma Exhibited in Agglutination Reactions Involving Duck Erythrocytes and Plasma of Chicks Recovered from Lophurae Malaria. E. R. Becker, T. M. Schwink and R. M. Prather Jr.—p. 95.
Ineffectiveness of Cortisone Therapy in Mice Infected with Japanese B Encephalitis and Adverse Effect of High Doses. E. P. Vollmer and H. S. Hurlbut.—p. 103.

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Journal Nat. Cancer Inst., Washington, D. C.

11:1081-1324 (June) 1951. Partial Index

Diagnosis of Unsuspected Cancer of Cervix. R. B. Nelson and A. W. Hilberg.—p. 1081.
Effect of Thyroxine on Lymphoid-Tissue Mass of Immature Female Mice. S. N. Marder.—p. 1153.
Histopathogenesis of Pulmonary Tumors Induced in Strain A Mice by Urethan. F. K. Mostofi and C. D. Larsen.—p. 1187.
Observations on Cultivation of Surgical Specimens of Human Ovaries in Vitro. G. G. Rose, F. M. Townsend and C. M. Pomerat.—p. 1223.
Studies on "Cytotoxic" Property of Mammary Tumor Agent Antiserum. L. W. Law and R. A. Malmgren.—p. 1259.
Method of Estimating Comparative Rates from Clinical Data: Applications to Cancer of Lung, Breast, and Cervix. J. Cornfield.—p. 1269.
Serologic Study of Microsome Fraction of Normal and Neoplastic Mouse Tissues. R. A. Malmgren, B. E. Bennison, B. F. Anderson and C. C. Risley.—p. 1277.
Action of Tissue Extracts on Cell Division. L. V. Heilbrunn, W. L. Wilson and D. Harding.—p. 1287.

Kansas Medical Society Journal, Topeka

52:421-472 (Sept.) 1951

Acute Anesthetic Emergencies. P. H. Lorhan and E. M. Wright Jr. —p. 421.
Abstract on New Growths of Skin and Their Management. C. C. Dennie and D. L. Fuhrman.—p. 425.
Personalized Pre-Partum Care. J. H. Moore.—p. 430.
Rehabilitation of Quadriceps. American College of Surgeons Committee on Trauma.—p. 434.

Nebraska State Medical Journal, Lincoln

36:281-312 (Sept.) 1951

The Medical Schools and the Doctors. R. G. Gustavson.—p. 283.
Arteriosclerosis—Present Concept of Significance, Pathogenesis, and Therapy. F. W. Niehaus.—p. 287.
Treatment of Advanced Malignancy of Urinary Bladder and Prostate Gland. W. J. McMartin.—p. 291.
Rheumatoid Arthritis—Diagnosis and New Concepts of Therapy. H. N. Neu and W. J. Reedy.—p. 293.
Hypersplenism. R. A. Youngman.—p. 297.
The American Academy of General Practice. H. D. Runty.—p. 300.
Some Public Health Aspects of Water Impoundment. A. Johnson and L. O. Vose.—p. 303.

New England Journal of Medicine, Boston

245:317-350 (Aug. 30) 1951

Recurrence of Vasoconstrictor Activity After Limb Sympathectomy in Raynaud's Disease and Allied Vasomotor States. C. W. Robertson and R. H. Smithwick.—p. 317.
Calcification of Vas Deferens: Its Relation to Diabetes Mellitus and Arteriosclerosis. J. L. Wilson and J. H. Marks.—p. 321.
*Clinical Appraisal of Hexamethonium (C_6) in Peripheral Vascular Diseases. F. A. Finnerty Jr. and E. D. Freis.—p. 325.
*Steatorrhea Following Use of Antibiotics. R. R. Merliss and A. Hoffman. —p. 328.
Medical Uses of Ion-Exchange Resins. W. P. Arnold Jr.—p. 331.

Hexamethonium in Peripheral Vascular Diseases.—Because of the ganglion-blocking action of hexamethonium, it seemed justified to investigate the effects of this drug in patients with peripheral vascular diseases. The 29 patients in whom Finnerty and Freis used hexamethonium included 2 with arterial embolism, 1 with primary arterial thrombosis, 3 with Buerger's disease, 2 with Raynaud's phenomenon, 1 with causalgia, 5 with arteriosclerosis obliterans, and 16 with thrombophlebitis. All were hospitalized during treatment. The authors concluded that hexamethonium is approximately as effective as paravertebral sympathetic block. The advantages of hexamethonium were its ease of administration and extreme potency, permitting more or less continuous inhibition of neurogenic vasospasm for long periods. Its disadvantages were the development of hypotension, especially in the erect position, and constipation in a few cases.

Steatorrhea Following Use of Antibiotics.—Since the antibiotics aureomycin, chloramphenicol, and terramycin influence a wide range of bacteria, are effective orally, and are reputed to be without serious toxicity, they have been widely used. It is now realized, however, that they may produce black tongue, vaginitis, pruritus ani, and proctitis. More recently, prolonged diarrhea and pulmonary disease have been observed. The four cases reported in this paper and four previously reported cases establish an etiological relation between prolonged diarrhea and the administration of antibiotics. Chloramphenicol, aureomycin, terramycin, and penicillin-sulfonamide combinations are the drugs chiefly responsible for this form of diarrhea, which seems to originate in the small bowel. The presence of fat in the stools, the tendency of the diarrhea to be aggravated by fat ingestion, and the relatively mild nature of the diarrhea are features that are commonly seen in steatorrhea from small-bowel dysfunction. Moreover, in 13 cases x-ray findings pointed to the small bowel as the source of the diarrhea, which closely resembles the diarrhea of the sprue syndrome. It is probably due to a deficiency state secondary to the destruction of the normal intestinal flora. The diarrhea responds readily to parenterally administered liver in conjunction with ingestion of B vitamins.

Ohio State Medical Journal, Columbus

47:801-896 (Sept.) 1951

Report of Death from Bronchial Asthma During Cortisone Therapy. A. R. Zoss and R. Zodikoff.—p. 825.
Myeloid Metaplasia: Case Report and Brief Review of Literature. E. Wasserman.—p. 828.
*Anterior Poliomyelitis in Pregnancy. W. Brehm.—p. 830.
Co-Existing Hydatidiform Mole, Living Child and Placenta Praevia. R. V. Beltz and C. L. Hutchins.—p. 832.
Primary Carcinoma of Fallopian Tube: Report of Case. C. R. Jablonski. —p. 834.
Glaucoma. L. V. Kogut.—p. 837.
Practical Aspects of Potassium Therapy in Surgical Patient. E. H. Ellison, T. W. Morgan and R. M. Zollinger.—p. 839.
Surgical Approach to Control of Epilepsy. O. P. Kimball.—p. 842.

Anterior Poliomyelitis in Pregnancy.—Brehm reports the histories of two patients in whom poliomyelitis developed during pregnancy. The first woman, who had poliomyelitis in July, carried her infant to term in November. The second woman had a premature delivery in the sixth month of pregnancy during the attack of poliomyelitis. Pregnancy does not seem to have any influence on the severity of the disease or the residual paralysis. The degree of spinal paralysis has no serious effect on labor. The lack of voluntary muscular effort does not contraindicate vaginal delivery. Cesarean operation has probably been employed oftener than necessary. There is no reason to terminate the pregnancy prior to term except for indications other than the poliomyelitis. The general consensus that pregnancy increases the susceptibility to poliomyelitis is difficult to reconcile with the fact that the blood levels of estrogen and progesterone are high, which supposedly provides a protection against this virus; on the other hand, pregnancy probably increases the permeability of the upper respiratory tract and produces chronic fatigue. No cases of congenital poliomyelitis have been reported.

Radiology, Syracuse, N. Y.

57:157-304 (Aug.) 1951

Physical and Clinical Aspects of Supervoltage Rotational Therapy. H. F. Hare, S. W. Lippincott Jr., D. Sawyer and others.—p. 157.
Value of Cross-Section Diagrams in Delivering Accurate X-Ray Therapy into Female Pelvis. J. Love, G. N. Combs, W. A. Askew and M. Harcourt.—p. 169.
Primary Malignant Epithelial Tumors of Small Bowel. A. G. Barsh. —p. 177.
Abrodil Myelography in Herniated Disk in Lumbar Region. J. Lange and H. Odegaard.—p. 186.
Roentgenographic Findings in Lesions of Lingula. T. F. Leigh and W. A. Hopkins.—p. 193.
Bronchogenic Cysts. R. J. Healy.—p. 200.
Herniation of Lung in Cervical Region. H. A. Reinhart and M. B. Hermel.—p. 204.
Recumbent Esophagogram: X-Ray Method for Early Detection of Left Atrial Enlargement. S. Schorr, F. Dreyfuss and A. Schwartz.—p. 208.
Perforation of Duodenal Ulcer During Fluoroscopy: Disposition of Barium Sulfate in Abdominal Cavity. R. S. Hayden.—p. 214.
Importance of Relation Between Anthropometric Index and Transverse Cardiac Diameter for Appraising Size of Heart. G. Esguerra Gómez. —p. 217.
*Studies with Radioiodine: II. Treatment of Patients with Hyperthyroidism by I^{131}. E. R. Miller, M. E. Dailey, M. H. Soley and others. —p. 227.
Determination of Tissue Dosage. F. Hutchinson.—p. 234.
Selection of Optimum Kilovoltage for Dental Radiography: I. Preliminary Studies. A. H. Wuehrmann and C. J. Monacelli.—p. 240.
New Film Projector for Full-Sized Original Roentgenograms. E. Gordon and J. J. Schwartzman.—p. 248.
Radiation Doses from Diagnostic X-Ray Studies. J. S. Handloser and R. A. Love.—p. 252.

Radioiodine in Treatment of Hyperthyroidism.—This is a report on the first 100 consecutive patients to whom radioactive iodine (I^{131}) was given for the treatment of hyperthyroidism at the University of California School of Medicine, San Francisco,

since 1945. Patients with nodular goiters and those who were pregnant were not accepted for this form of treatment. As the first step in treatment a test dose of I^{131}, usually 100 μc, was administered orally, the uptake in the thyroid was determined at intervals, and the uptake curve was drawn. From the estimated thyroid weight and the uptake curve for the test dose, the amount of I^{131} necessary to deliver 6,000 beta roentgen equivalents to the thyroid was calculated. This amount was given as an oral dose and its uptake by the thyroid measured in a manner similar to that for the test dose. Thereafter, the patient was examined at weekly intervals. About six weeks after the initial treatment dose, the patient was reexamined, and retreatment was given if necessary. About 12 weeks after the initial therapy dose, an uptake curve was again obtained, and treatment given as indicated. In most cases more than one dose of I^{131} was given. It was hoped that patients could be cured without being rendered hypothyroid by this treatment. While this was not fully possible, the incidence of hypothyroidism was perhaps slightly less than following surgery. The results of radioiodine therapy for hyperthyroidism in patients without nodular goiters were satisfactory. In 89 patients remission was achieved; that is, the signs and symptoms of hyperthyroidism disappeared, the thyroid returned to normal size, and the laboratory findings no longer suggested hyperthyroidism, even though the patient might have hypothyroidism and/or exophthalmos. Follow-up studies of patients up to five years revealed a striking absence of recurrence.

Southern Medical Journal, Birmingham, Ala.

44:769-880 (Sept.) 1951

Acute Pancreatitis and Its Treatment. M. Gage and G. Gillespie.—p. 769.
Determination of Blood Amylase in Fluid Aspirated from Flank in Pancreatitis: New Diagnostic Aid. F. H. Bowen.—p. 775.
Catarrhal Otitis Media with Effusion: Disease of Retropharyngeal Lymphatic System. J. M. Robison and H. O. Nicholas.—p. 777.
New Implant and Technic for Correction of Loss of Orbital Tissue. A. W. McAlester III.—p. 789.
Ordinary Problems Met with in Electrosurgery of Bladder Neck and Their Solution. J. H. Dougherty.—p. 791.
Medical Management of Chronic Ulcerative Colitis. C. C. Wilson.—p. 797.
Banthine® in Peptic Ulcer and Chronic Ulcerative Colitis: Clinical and Experimental Observations. K. Plummer, J. O. Burke and J. P. Williams.—p. 801.
Banthine® in Treatment of Duodenal Ulcer. E. J. Poth and S. M. Fromm.—p. 807.
The Normal Menstrual Cycle. J. P. Pratt.—p. 812.
Functional Uterine Bleeding. W. M. Allen.—p. 817.
Incidence and Management of Uterine Bleeding in Non-Malignant Pelvic Lesions. H. M. Sluder and F. R. Lock.—p. 820.
Mesantoin® in Management of the Hospitalized Psychotic Epileptic: Report of Toxic Effects and One Fatality. L. Hofstatter.—p. 827.
Role of Anesthesia in Postoperative Anorectal Pain. T. E. Smith.—p. 832.
*Insects and Allergic Problems. R. Bowen.—p. 836.
Some Suggestions on Dermatologic Care of Atopic Patient. H. S. Alden.—p. 842.
Method for Improving Depth Distribution. J. Love, G. N. Combs, W. A. Askew and M. Harcourt.—p. 846.
Orthopedic Shoulder Problem as Related to Industrial Medicine. F. C. Reynolds and L. T. Ford.—p. 849.
Education in General Practice. J. O. Boyd Jr.—p. 853.

Insects and Allergic Problems.—After citing a death in a boy bitten by ants, Bowen says that the literature describes more than 30 varieties of insects that may cause allergic disease. He lists 25 such species and shows that insects may produce sensitization by scales or dust from wings or body, injection of venom through the sting and the instillation of salivary secretions. In some persons the effect of sensitization is due not to the direct action of the irritant but to an acquired specific sensitization. Some children show a true Arthus phenomenon after being bitten by a mosquito. There is a higher incidence of insect dermatoses in children than among adults. Some persons develop a season's immunity in about 10 days, but react again, although less violently, the following season. This explains why visitors to the West Coast will experience unpleasant bites from fleas, yet the natives apparently are not disturbed. Papular urticaria (lichen urticatus) is especially frequent in infants and children, and occurs particularly during the warmer months. Many children with this disorder have been subjected to skin tests and food restrictions to no avail. A history of similar lesions the preceding year is frequently obtained and is suggestive of allergy to insects. The author believes that allergy to mosquitoes and chiggers is an important cause of papular urticaria, in that of 27 patients 24 reacted to mosquitoes and 3 to chiggers. Secondary infection is frequent and scabies must be ruled out, possibly by the use of benzyl benzoate. Some of these children have a dog, and fleas and bed bugs are possible causes of their skin lesion. When skin tests are made for the detection of insect allergy, they should be read in the second 24 hour period, as the immediate reaction may be negative. Moths and caterpillars may produce severe urticaria, occasionally with fatal outcome. Stings from bees and wasps are also sometimes fatal. Aphids and fleas are mentioned as possible causes of allergic reactions. Dichlorodiphenyltrichloroethane (DDT) and insect repellents are of value in the prevention of insect bites. Epinephrine and histamine antagonists are helpful in severe reactions after insect bites.

Tennessee State Medical Assn. Journal, Nashville

44:321-364 (Aug.) 1951

Laboratory Aids for General Practitioner. J. Adams.—p. 321.
Liver Function Tests: Their Appropriate Selection in Diagnosis and Prognosis. C. P. Wofford.—p. 325.
Painful Shoulders: Periarthritis. H. Smith.—p. 330.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

59:431-494 (Sept.) 1951

Improved Uterine Closure in Classical Cesarean Section. P. Jacobson.—p. 431.
Tumors of Carotid Body: Partial Occlusion of Common Carotid Artery Induced by Polythene. L. R. Chauncey.—p. 434.
*Ovarian Carcinoma Subsequent to Hysterectomy. D. Thorp.—p. 440.
Endometriosis: Study of 150 Private Cases. R. E. Fallas.—p. 448.
Pudendal Block. C. D. Kimball.—p. 460.
Vitallium Prosthesis in Treatment of Fracture of Carpal Navicular. R. F. Legge.—p. 468.
Esophago-Cardioplasty for Megaesophagus: Failure of Operation. G. W. Nagel and J. A. Ignatius.—p. 472.
Many Different Temperatures of Human Body and Its Parts. E. F. DuBois.—p. 476.

Ovarian Carcinoma Subsequent to Hysterectomy.—During the five year period 1945 to 1949, a total of 276 pelvic tumors were removed at one hospital from women who previously had undergone hysterectomy and in whom one or both ovaries had not been removed. Nearly all of these 276 tumors evolved from the ovary, and nearly every type of ovarian tumor was represented. Ten were malignant, and five of these women are already dead as the result of the ovarian malignancy. The author stresses that the widely accepted conservation of the ovaries in women undergoing hysterectomy requires reevaluation. He feels that since ovarian atrophy or cystic changes ensue following hysterectomy it is best to combine hysterectomy with a bilateral oophorectomy, and questions that the patients' future well-being can be defined in terms of freedom from hot flushes. Authors inconsistently observe that ovarian atrophy frequently or even invariably follows hysterectomy, while at the same time they also advise against removal of the gonads. This "touch-them-not" tradition stems largely from the false premise that women must invariably suffer distress with the menopause. Artificial menopause resulting from surgery and/or x-rays need be no more distressing than the symptoms of physiological decline in ovarian activity. There is no valid reason for leaving unpredictable organs like the ovaries, which later in life might produce serious disease.

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West Virginia Medical Journal, Charleston

47:285-318 (Sept.) 1951

ACTH and Cortisone Therapy of Ocular Conditions. C. M. Polan.—p. 285.
Pulmonary Resection for Solitary Metastatic Lesion. R. W. Postlethwait and C. B. Hanna.—p. 289.
Your State Society—The Home Front. R. D. Bernard.—p. 291.
Diseases of Larynx. J. T. Spencer.—p. 294.
Advisory Groups in Public Health Administration. N. H. Dyer.—p. 296.
*Method of Removing Foreign Bodies from Nasal Cavity Without Instruments. K. D. Bailey.—p. 298.

Removing Foreign Bodies from Nasal Cavity.—Smooth surfaced objects such as beads or certain seeds that swell on contact with the moist nasal mucosa are difficult to remove from the nose of children by means of forceps. Bailey places the patient on his back, covers his mouth with a clean handkerchief and, while occluding the nasal orifice opposite the foreign body by finger pressure, he gently blows through the handkerchief into the child's mouth. The foreign body will shoot out dramatically.

FOREIGN

Actas Dermo-Sifiliograficas, Madrid

42:749-826 (May) 1951. **Partial Index**

*Infiltrating Epithelioma of Tongue Probably Caused by Dental Prosthesis. X. Vilanova and F. Oller.—p. 768.
Erythrodermic Eczemas Treated with Cortisone. P. Chana and J. Zañartu. —p. 785.
Preliminary Note on Antibiotic Action of a Penicillium on Dermatophytes. M. P. Miguens.—p. 806.

Infiltrating Epithelioma of Tongue Probably Due to Dental Prosthesis.—Lingual epitheliomas most frequently result from the friction or irritation caused by teeth that are badly placed or have sharp edges. Injuries to the sides of the tongue soon give rise to reparative epithelial hyperplasia, which degenerates easily into squamous cell carcinoma. Electrogalvanic currents originating from metals of varying electrostatic potential used in dentistry may cause repeated burns of the buccolingual mucosa, giving rise to leukoplakia, which sooner or later degenerates into epithelioma. The authors report a case of infiltrating epithelioma of the tongue in a woman aged 70 that was apparently caused by friction of the tongue against a prosthetic palate she had worn since she was 14. They state that such cases may increase as a result of ill-considered extraction of the teeth, with subsequent use of prostheses, in an effort to eliminate foci of infection.

Archiv für klinische Chirurgie, Heidelberg

269:1-86 (No. 1) 1951. **Partial Index**

Spontaneous Arrest of Hemorrhage and Mode of Action of Local Hemostatics. T. Halse and K. Hummel.—p. 1.
*Treatment of Carcinoma of Thyroid by Means of Radioactive Iodine. O. Eichler, H. Hess, F. Linder and K. Schmeiser.—p. 19.
Observations and Clinical Experiences on 372 Cases of Tetanus. W. Köle. —p. 37.
Statistical and Clinical Contribution to the Problem of Thrombosis and Embolism. M. Wenzl and R. Kühlmayer.—p. 46.
Retropubic Prostatectomy by the Millin Technique (Report on 100 Patients). H. Bross.—p. 65.
Technic and Organization of Preservation of Blood. J. Vollmar.—p. 76.

Radioiodine in Thyroid Carcinoma.—On the basis of reports in the world literature and their own observations on 10 patients Eichler and associates discuss the use of radioactive iodine in the treatment of carcinoma of the thyroid. This method is especially suited for advanced cases, in that it permits the simultaneous irradiation of the primary tumor and of its metastases. Secondary effects resembling radiation intoxication are slight. There is usually a decrease in leukocytes, but the erythrocyte count shows no change. Local reactions are slight, but 4 of the 10 patients complained of burning pains in the skeletal metastases as soon as the dose exceeded 10 mc. Some patients complained of burning sensations of the mucosa of the mouth and the conjunctivas, probably the result of the elimination of iodine in the saliva and the tear ducts. Therapeutic results suggest that clinical cure will be possible in only a few cases, but, in some cases, significant regression has been observed in the size of the primary tumor and metastases with corresponding improvement in the general condition. In two of the authors' cases dyspnea was reduced, probably because of a temporary regression in the cancer of the thyroid. One patient showed a surprising improvement of the general condition, with a weight increase of 16 kg. Congestion in the head and pressure in the neck lessened, but a measurable regression in metastases was never observed. In two patients skeletal metastases remained stationary; however, new metastases developed at other sites in one of these patients. Eight of the ten patients had metastases in the skeletal system. Only two of these showed a therapeutically effective uptake of iodine in the skeletal metastases, two others revealed a slight uptake and four others no uptake. The doses did not reach the optimal level, because the supply of the isotope was limited. Increase in the life span or arrest of the cancer have been reported more frequently than objectively measurable tumor regression, but even with respect to these factors longer observation is required for adequate evaluation.

Arquivos de Clínica, Rio de Janeiro

12:503-616 (June) 1951. **Partial Index**

*Calcification of Myocardial Infarct and of Coronary Arteries. N. Botelho Reis and E. Amorim.—p. 503.

Calcification of Myocardial Infarct and Coronary Arteries.—The authors report a case of roentgenologically demonstrable calcification of a myocardial infarct and both coronary arteries. The patient, a 65-year-old man, suffered two attacks of myocardial infarction at the age of 53 and 56, respectively. The last attack was confirmed electrocardiographically. Nine years later he was apparently healthy, except for occasional mild pain of an anginal type. Physical examination of the heart revealed no abnormalities, and blood pressure was normal, but there was electrocardiographic evidence of intraventricular block, and a roentgenogram of the heart showed the above-mentioned calcification. One year later the patient died suddenly of acute pulmonary edema. The authors discuss the roentgenologic differentiation of myocardial and coronary calcification from pericardial calcification, and the clinical and laboratory differentiation from myocardial calcification due to hydatid disease. They say that calcification of a myocardial infarct does not necessarily imply the presence of a ventricular aneurysm.

British Medical Journal, London

2:559-622 (Sept. 8) 1951

Neural Control of Pituitary Gland: I. Neurohypophysis. G. W. Harris. —p. 559.
*Cortisone and A.C.T.H. in Hypopituitarism. V. K. Summers and H. L. Sheehan.—p. 564.
Effect of Cortisone on Crisis in Simmonds's Disease. E. N. Allott and J. H. Simmons.—p. 568.
Case of Simmonds's Disease with Mental Symptoms. J. Todd.—p. 569.
Plasma Pentose Levels in Pre-eclampsia and Their Aetiological Significance. H. N. Green, J. D. Hopewell and C. J. Threlfall.—p. 571.
*Hypoglycaemia, in Treatment of Rheumatoid Arthritis. G. D. Kersley, L. Mandel, M. R. Jeffrey and others.—p. 574.
*Spontaneous Hypoglycaemia After Insulin Therapy in Rheumatoid Arthritis. G. D. Kersley, L. Mandel, K. B. Taylor and M. R. Jeffrey. —p. 578.
Neurological Origin of Peptic Ulcer: Frontal-Lobe Lesions and Gastric Ulcer. J. L. Arteta.—p. 580.
Treatment of Blepharitis. D. Ainslie.—p. 582.

Cortisone and Corticotropin in Hypopituitarism.—Of five patients with hypopituitarism due to postpartum necrosis of the anterior lobe, three were treated with cortisone and two with corticotropin (ACTH). Two patients were given intramuscular injections of 100 mg. of cortisone acetate daily for 20 days and one patient was given the same treatment for 12 days. There was pronounced clinical and biochemical improvement, though two of the patients became depressed, moody, and very obstinate after about two weeks. After the cessation of the treatment there was a gradual deterioration in the patients' condition. The obstinacy and uncooperativeness gradually lapsed into the passive lethargy of the untreated condition. Of the two patients treated with corticotropin, one was given intramuscular injections of 25 mg. of the drug every eight hours for seven days, and the other was given the same treatment for 15 days. There was a slight clinical and biochemical improvement, but after a few days migraine and hemiparesis occurred in both patients, and one became comatose. It seems advisable that corticotropin be employed only with the greatest caution in the treatment of hypopituitarism.

Treatment of Rheumatoid Arthritis with Hypoglycemia.—Of 72 patients with rheumatoid arthritis treated by induction of insulin hypoglycemia, 59 showed clinical improvement after treatment and 32 showed pronounced improvement, but two months later only 40 were still improved and only 22 were greatly improved, while relapses had occurred in the others. Only seven greatly improved patients appeared to be in complete clinical remission six months after completing treatment. Gain in weight was considerable and occurred in all but three patients. There was a tendency to improvement in the sedimentation rate, but not in the hemoglobin level. Reduction in circulating eosinophils occurred almost without exception, suggesting pituitary-adrenal stimulation. Significant increase in potassium excretion in the 24 hour specimens of urine was observed in four of six patients, and a decrease of more than 50% in the phosphate excretion during the period of hypoglycemia in four of five patients in

whom these determinations were made. Of 22 control patients who received physical treatment without insulin therapy, 17 were improved and 3 were greatly improved. A second course of treatment with insulin in hypoglycemic dosage had less effect than the first. In a comparison of the clinical effects of treatment with insulin in hypoglycemic dosage and corticotropin (ACTH), three patients who had responded well to insulin and three patients who had failed to respond to insulin were given short courses of 100 mg. of corticotropin in divided doses for four days and then with doses modified as clinically indicated. The three patients who had responded to insulin reacted excellently to corticotropin, while the other three patients responded poorly or not at all. The fact that the degree of clinical response to insulin corresponded closely to the response to corticotropin again suggests that hypoglycemia may have a pituitary-stimulating effect. From the practical point of view, hypoglycemic therapy may be regarded as having a limited value in tiding the patient over a temporary relapse, particularly if this has been occasioned by some temporary or removable factor. In conjunction with other methods it may help in enabling some mildly affected patients to return to work.

Spontaneous Hypoglycemia in Rheumatoid Arthritis.—Of 80 patients with rheumatoid arthritis treated by inducing insulin hypoglycemia, two women aged 36 and 43 had attacks of spontaneous hypoglycemia shortly after therapy was terminated. The first patient received 24 to 38 units of soluble insulin daily for 13 days. Hypoglycemic reactions occurring on 10 of those days resulted in pronounced improvement in the arthritis that was maintained for five weeks. Three months after the termination of the first course a second course of insulin hypoglycemia was given for five days, on four of which good reactions occurred with doses of 32 to 44 units of insulin. Some improvement resulted. An attempt to maintain improvement by inducing single weekly hypoglycemic reactions with 36 units of insulin given one week after the end of the second course was unsuccessful; because of gastroenteritis, insulin was discontinued. Twelve days later the patient was delirious for four hours during the night. Attacks occurred daily for nine days and were controlled by a high-protein diet with a feeding at bedtime. The second patient was given two courses of insulin, with an interval of four months between the two. On the day after the last insulin treatment, the patient was observed to be sweating and incoherent early in the morning and was later incontinent of urine. A similar attack took place two days later, and both attacks were terminated by orally administered dextrose. Only one further attack occurred, 10 days later after an overnight fast and toward the end of a hippuric acid test. In six other patients who had received similar treatment, daily fasting blood sugar estimations for 12 days after cessation of insulin therapy showed that the maximum drop in blood sugar occurred about the 10th day. It seems advisable to insist on the institution of a high-protein diet with a "snack" at bedtime for three weeks after any course of insulin therapy, for the attacks, though not serious, are distressing to the patient.

Edinburgh Medical Journal

58:349-412 (Aug.) 1951

Twenty Years' Experience with Surgical Treatment of Pulmonary Tuberculosis. J. Holst.—p. 349.
Mode of Action of Mucin in Promoting Bacterial Infection. A. F. Maccabe and H. K. King.—p. 377.
Plasma Cholesterol in Coronary Disease. D. P. Basu and C. P. Stewart. —p. 392.

Journal de Médecine de Lyon

32:791-824 (Sept. 5) 1951

First Attempts at Treatment of Chronic Rheumatisms with Cortisone and A.C.T.H. P. Ravault, G. Vignon, A. Charrat and others.—p. 791.
*Treatment of Infectious Endocarditis with Aureomycin. Naussac, Blanc, Lehmann and Larbre.—p. 805.

Aureomycin Treatment of Infectious Endocarditis.—The authors treated three patients with infectious endocarditis with penicillin followed by aureomycin. A fall in temperature was always the first sign of the efficacy of treatment with aureomycin. Improvement in the general condition followed: appetite returned, weight was regained, anemia decreased, and a feeling of well-being and return of strength was established. Nephritis, which persisted in spite of the treatment with penicillin, disappeared under the influence of aureomycin. Cardiac phenomena were stabilized: in no case did the heart increase in size. Signs of old embolisms disappeared, and no new ones occurred. Follow-up of the patients nine, eight, and seven months later indicated that they had been cured. Infectious endocarditis has two components, one in the blood, the other in the tissues. The first is shown by septicemia, but septicemia alone does not control the evolution of infectious endocarditis. The visceral or tissue component is equally important. Patients often overcome the septicemia by the help of the antibiotics only to succumb to the cardiac or renal inflammatory processes. The antibiotic of choice should be one not only that proves its activity in vitro but that is also well tolerated by the diseased tissues. Aureomycin fulfills both of these criteria. The authors advocate a two-stage treatment. Penicillin is used in large doses, 10 to 20 million units a day in four or eight injections as soon as the diagnosis is established. The kind used must be plain penicillin, not slow-acting. These doses are continued for 15 to 20 days, until a total of 250 to 300 million units has been given. Penicillin is then discontinued and administration of aureomycin begun. The daily doses are 3 gm. for 20 days, then 2 gm. The medicine is given in spaced doses, continued until a total dosage of 100 gm. has been attained (about 40 days). These doses were well tolerated by the patients, save for slight digestive disturbances at first. The authors attach great importance, first, to the successive administration of the two antibiotics and, second, to the administration of large doses for a long period.

Lancet, London

2:317-366 (Aug. 25) 1951

Changing Scenes in Medicine. A. V. Neale.—p. 317.
On Writing to be Read. J. W. Howie.—p. 320.
The Physician and His Art. C. Cameron.—p. 321.
Preparation of Theses for Higher Degrees. R. Whitehead.—p. 323.
Microscopic Appearances and Mental Orientation. H. S. D. Garven. —p. 326.
Influence of National Service on the Undergraduate. R. E. Verney. —p. 328.

2:367-410 (Sept. 1) 1951

Pathogenesis of Megaloblastic Anaemias. L. J. Witts.—p. 367.
*Gastro-Oesophageal Regurgitation. N. A. Lawler and N. D. McCreath. —p. 369.
*Relation of Salicylate Action to Pituitary Gland: Observations in Rats. H. Van Cauwenberge.—p. 374.
Effect of Sodium Salicylates on Circulating Eosinophils and Urinary Uric-Acid: Creatinine Ratio in Healthy Volunteers. J. Roskam, H. Van Cauwenberge and A. Mutsers.—p. 375.
Reactions of Isolated Human Asthmatic Lung and Bronchial Tissue to Specific Antigen: Histamine Release and Muscular Contraction. H. O. Schild, D. F. Hawkins, J. L. Mongar and H. Herxheimer.—p. 376.
Amyloid Disease and Rheumatoid Arthritis: Report of Three Cases. M. O. Skelton.—p. 382.
Prognosis of Portal Hypertension. P. C. Reynell.—p. 383.
Simulation of Insanity: Report of Two Cases. I. Atkin.—p. 385.
Purulent Parotitis in the Newborn: Report of Case. W. A. B. Campbell. —p. 386.

Gastroesophageal Regurgitation.—In many patients who complain persistently of indigestion, but whose symptoms do not fit a known pattern and in whom investigation does not reveal an organic cause, the final diagnosis is, all too often, functional dyspepsia. Lawler and McCreath are convinced that in a large number of these patients the symptoms are in reality due to gastroesophageal regurgitation. In a series of 151 new cases of dyspepsia, 45 (30%) were caused by gastroesophageal regurgitation. In this condition the patient complains of a recurrent, burning, or tight substernal or high epigastric pain, which often rises to the suprasternal notch. The pain is that defined as heartburn by Alvarez and is related not to food but to posture. The pain comes on when the patient lies down or bends forward. In about half the cases the pain was felt not only under the sternum but also in the back between the scapula, in the left half of the chest, in the left shoulder, up either side of the sternum, and occasionally behind one or both ears. About half the patients complain of acid regurgitation into the mouth, the acid fluid often containing particles of food. In the great majority of patients the discomfort is relieved in a short time by

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standing up, and it does not occur if the patient avoids lying down or bending forward within three or four hours of the last meal. On the other hand, inflammatory or ulcerative changes may arise and produce additional symptoms. The phenomenon can occur in the absence of sliding or fixed hiatal hernia. A plea is made for the early recognition of the condition, because postural treatment relieves the symptoms and, if started in the early stages, can prevent the development of esophagitis and esophageal ulcer.

Salicylate Action and Pituitary Gland.—The effect of intensive salicylic-acid therapy on the urinary excretion of adrenocortical steroids led Van Cauwenberge to investigate whether salicylates act on the suprarenal cortex directly or through the hypothalamus and the pituitary gland. Experiments were made on rats that had undergone hypophysectomy eight days earlier and on intact rats. It was found that the administration of a large dose of salicylate to intact rats produces biochemical and hematological signs of adrenocortical hypersecretion, which cannot be observed in rats subjected to hypophysectomy. The adrenocortical hypersecretion occurring with salicylate therapy therefore depends on the pituitary.

Medizinische Monatsschrift, Stuttgart

5:525-596 (Aug.) 1951. **Partial Index**

Resorption and Utilization of Hemoglobin in Human Digestive Tract. W. Stich and H. Fath.—p. 538.
Atelectasis as Symptom of Bronchial Tuberculosis. K. Beck.—p. 546.
Hormonal Function of Spleen. O. Unger.—p. 553.
*Eosinophilia in Allergic Myocarditis and Endocarditis. H. Schlecht. —p. 555.
Behavior of Serum Protein Bodies in Endocarditis Lenta in Relation to Clinical Picture of Disease. R. Burkhardt and E. Schinner.—p. 559.

Eosinophilia in Allergic Myocarditis and Endocarditis.—Allergic reactions become localized in the joints and especially in the heart, its valvular and muscular apparatus and its vessels. After a general discussion of eosinophilia in blood and tissues, the author describes five patients who had characteristic allergic myocarditis or endocarditis. The first patient had coronaritis and myocarditis that began acutely with mild increase in temperature and could be demonstrated in the electrocardiogram. It was accompanied by arthritic symptoms. Increase in eosinophils could be demonstrated only once at the time of the second heart attack and the attack of sacroiliac arthritis. Two other patients had an allergic myocardial lesion, which was diagnosed on the basis of the electrocardiographic aspects and the presence of eosinophilia. In a fourth patient, there was relapsing subfebrile rheumatic allergic endocarditis and myocarditis, and in the fifth case afebrile rheumatic focal myocarditis was associated with typical changes in the electrocardiogram. The author stresses that eosinophilia as a characteristic and diagnostic sign for the existence of an allergic disease can be found only when blood examinations are repeated daily or at least at short intervals. A single test is not sufficient. This applies not only to allergic diseases of the heart but to all allergic processes.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

95:2309-2380 (Aug. 11) 1951. **Partial Index**

Hailey's Disease, Chronic Benign Familial Pemphigus. J. J. Zoon, J. W. H. Mali, A. Roskott and A. C. J. Tellier.—p. 2316.
Treatment of Congenital Stenosis of Esophagus in Prematurely Born Infant. P. M. E. Ph. Nyst.—p. 2333.
*Malignant Hypertension Treated with Prefrontal Lobotomy and Psychotherapy. J. Groen.—p. 2336.

Prefrontal Lobotomy and Psychotherapy in Malignant Hypertension.—Groen presents a detailed history of a patient in whom malignant hypertension developed as a result of a severe psychic conflict from which the patient could not free himself. Since neither medical nor psychotherapeutic measures had any effect, a prefrontal leukotomy was done. The operation had no direct effect on the blood pressure, but it made the patient amenable to psychotherapy. A marked decrease in systolic and diastolic blood pressure with considerable improvement in the clinical condition, eyegrounds, and urine followed. Two years after the operation the patient is alive and at work.

Nordisk Medicin, Stockholm

46:1091-1122 (July 18) 1951. **Partial Index**

*Treatment of Newborn Children of Rh-Immunized Mothers. B. Broman. —p. 1091.
Bacterial Endocarditis. S. Aarseth and V. Gaustad.—p. 1093.
Acute Fulminant Occluding Laryngotracheobronchitis in Children. P. W. Braestrup and J. C. Nielsen.—p. 1098.
Complication After Blood Transfusion Due to Rh Factor. H. E. Torp and S. Vasli.—p. 1101.

Treatment of Newborn Children of Rh-Immunized Mothers.—Exchange blood transfusion was carried out in 34 out of 41 Rh-positive children born to Rh-immunized mothers, with two deaths, both in infants with grave anemia at birth. None of the surviving children showed any signs of cerebral injury during the neonatal period or, as far as is known, later. Broman says that, while the results of the treatment of liveborn children with erythroblastosis are good, there is as yet no causal therapy to suppress Rh immunization of the mothers, and intrauterine deaths cannot be prevented. In his opinion, routine Rh typing of pregnant women and centralization of the obstetric care of Rh-immunized mothers are necessary conditions for continued improvement of the treatment in this field.

Praxis, Bern

40:707-726 (Aug. 30) 1951. **Partial Index**

Indications for Prostatectomy and Electroresection in Patients with Prostatic Disorders Complicated by Urinary Retention. A. Perret. —p. 707.
*Aureomycin for Mumps in Adults. F. Schaub.—p. 711.

Aureomycin in Mumps of Adults.—The course of mumps is more sevcre in young adults, and it also causes more frequent and more severe complications in them than it does in children. The most serious complication is orchitis, which appears in an average of about 30% of sexually mature males and which leads in from one-third to two-thirds of the cases to testicular atrophy and, in cases of bilateral involvement, even to sterility. Pancreatitis occurs in about 8% of cases. Meningitis and encephalitis are comparatively rare complications of mumps in adults, as are damage to the internal ear, oophoritis, mastitis, dacryocystitis, thyroiditis, iridocyclitis, and prostatitis. Until recently only symptomatic measures were available for the management of these complications. Schaub used aureomycin in the treatment of 17 recruits who contracted mumps in the course of an epidemic in a Swiss army camp. Seven of these were hospitalized immediately after onset, whereas the six others had had mumps for several days and already showed signs of complications such as orchitis and pancreatitis. The patients were treated with aureomycin for three to nine days. The total dose ranged up to 20 gm. In a comparison of the patients who were treated with aureomycin with an equal number of patients of similar age range treated between 1946 and 1950, it was concluded that the early administration of aureomycin in epidemic parotitis prevents the development of complications and has a favorable effect on the course of the primary disease. Already existing complications, such as orchitis and pancreatitis, are reduced in severity and subside more rapidly.

Prensa Médica Argentina, Buenos Aires

38:1409-1474 (June 8) 1951. **Partial Index**

Pulmonary Resection in Tuberculosis. O. A. Vaccarezza, R. Sampietro and F. E. Tricerri.—p. 1418.
Streptomycin in Treatment of Genital Tuberculosis in Men. J. C. Rey, I. Natin and J. Bossi.—p. 1428.
*Cortisone in Acute Gout. L. Broide.—p. 1429.

Cortisone in Acute Stage of Gout.—Cortisone and corticotropin (ACTH) have been used in the treatment of acute gout. Corticotropin causes rapid disappearance of acute attacks of gout that is resistant to colchicum, but when its administration is discontinued the attack recurs, either in the original location or in other joints, with increased violence, unless large doses of colchicum have been given with and after the corticotropin. The action of colchicum against gout is reenforced (but not constantly) by the hormone. Corticotropin is a new and valuable weapon against the aspects of gout most difficult to treat: the attack that resists colchicum and the formation of tophi. Corti-

sone, like corticotropin, stops the attack, but its withdrawal may be followed by recurrence. The disadvantage of cortisone, as compared to corticotropin, is the longer time it takes to act (usually 24 hours). The action of cortisone on gout is independent of its action on the carbohydrate metabolism and appears to result from humoral modifications, similar to those caused by venesection, which act on the collagen and the purine metabolism. The author states that cortisone should not be given to patients with gout who tolerate or react well to colchicum and its derivatives, because (1) it is not always effective; (2) it takes 24 hours to act; and (3) it is expensive. It should be given to patients who do not tolerate or react well to colchicum, but it must be noted that (1) in spite of its spectacular action in certain acute attacks it is sometimes totally ineffective; (2) it is useful only during attacks, and when it is withdrawn new attacks may occur; and (3) the new attacks, which previously would not have been influenced by colchicum, now give way rapidly before it.

Schweizerische medizinische Wochenschrift, Basel

81:805-828 (Aug. 25) 1951. **Partial Index**

Relation of Humeroscapular Periarthritis to Stiffness of Shoulder (Frozen Shoulder) and Its Therapy. J. Bloch and W. J. H. Nauta.—p. 805.
*Damage to Peritoneum and Intestine Caused by Hot Peritoneal Irrigations. M. Buser and J. de Puoz.—p. 812.
Significance of Hypohyseal-Diencephalic System for Water Excretion. W. Koella.—p. 819.

Damage to Peritoneum and Intestine by Hot Irrigation Fluid.—In studies on guinea pigs the effect of hot isotonic sodium chloride solution on the peritoneal cavity was investigated. With temperatures of 60 C and over irreparable damage was produced, such as peritonitis, mesenteric fat necrosis, thrombosis of mesenteric vessels and, as sequelae, hemorrhagic intestinal infarcts and intravascular hemolysis. With temperatures of from 70 to 80 C, necroses of the intestinal wall and ulceronecrotic enteritis developed. These studies were undertaken after a woman died following irrigation of the peritoneal cavity with isotonic solution of sodium chloride at a temperature of about 65 to 70 C. Pathological studies disclosed chronic ulcerative enteritis, which had been acutely intensified by the thermal effect of the irrigating fluid. Perforation followed, resulting in a fatal suppurating peritonitis. From observations on this case and from the animal experiments it is concluded that the temperature of the isotonic sodium chloride solutions used for peritoneal irrigation or to stimulate peristalsis should not exceed 50 C.

Settimana Medica, Florence

39:235-258 (May 15) 1951

Incidence and Forms of Hemopathy Observed in Medical Clinic of Sassari During Period 1945-1950. A. Scanu and G. Negroni.—p. 240.
*Therapeutic Action of Choline in Coronary Atherosclerosis. O. Carere-Comes, G. Sala and A. Sala.—p. 243.
Clinical Contribution to Amithiozone (Tb. 1/698) Therapy in Various Tuberculous Conditions of Respiratory Apparatus. F. Sorrentino and P. M. Asseretо.—p. 246.

Choline in Coronary Atherosclerosis.—Nineteen patients with coronary atherosclerosis were given two daily intramuscular injections of 1 gm. of choline hydrochloride supplemented in some cases with daily oral administration of 2 or 3 gm. of choline. The total dose of choline administered varied from 8 to 88 gm. The duration of the treatment varied from 4 to 37 days. The patients' ages ranged from 48 to 74 years. Cholesterol determination, subjective and objective symptomatology, and electrocardiographic tracings were compared with the values recorded before institution of treatment. Dyspnea and anginal pain decreased, disappearing almost completely in 11 patients. The pulse rate decreased from an average of 108 beats per minute to an average of 78 beats per minute. The systolic pressure dropped 20 to 40 mm. Hg in five patients and 5 to 15 mm. Hg in nine patients, it increased 10, 26, and 45 mm. Hg respectively in three patients and was unchanged in two patients. The diastolic pressure dropped 5 to 20 mm. Hg in 13 patients, increased 10 to 20 mm. Hg in four patients, and was unchanged in the others. Diuresis increased. There was a constant and pronounced decrease of cholesterol from an average of 177 mg. per 100 cc. to an average of 128 mg. per 100 cc. Erythrocyte sedimentation rate showed a pronounced decrease. Electrocardiographic tracings presented modifications, especially in the ST segment, which tended to normalization. Best results were obtained in the patients whose hypercholesteremia was more pronounced before treatment was instituted. Considering the rapid and beneficial therapeutic effect of choline in patients with coronary atherosclerosis, it is suggested that the drug acts to restore the elasticity of the wall of the coronary arteries rather than to cause regression of the atheromatous lesions.

Ugeskrift for Laeger, Copenhagen

113:1035-1080 (Aug. 9) 1951. **Partial Index**

*Investigations on Therapeutic Effect of Leocillin. K. A. Jensen, P. J. Dragstedt and I. Kiaer.—p. 1039.
*Effect of Leocillin in Acute Inflammation of Middle Ear. J. C. Nielsen.—p. 1049.
Single Daily Dose of Procaine-Penicillin in Acute Suppurative Otitis Media Compared with Effect of Combination Preparation Dipenicillin. J. C. Nielsen.—p. 1057.
Nor-Epinephrine in Blood in Pheochromocytoma. A. Lund and K. Møller.—p. 1068.

Therapeutic Action of "Leocillin."—Chemotherapy of chronic pulmonary affections with poorly vascularized processes and large cavities has not been especially encouraging. "Leocillin" (the dihydroiodide of the diethylaminoethyl ester of benzyl penicillin) has been shown to possess a greater affinity for lung tissue and to be eliminated in considerably larger quantities in the sputum than other penicillin preparations. The authors say that, while further experiences are necessary for final conclusions on the efficacy of "leocillin," it has effected a change of bacteria in the sputum more effectively than other penicillin preparations and has exerted an extraordinarily favorable curative action, the amount of sputum being reduced to a degree not previously observed. Further, the larger amounts of penicillin that diffuse into the sputum will be able to act in cases in which there is a moderate amount of penicillinase in the sputum and in cases in which poorly vascularized processes are present.

"Leocillin" in Acute Inflammation of Middle Ear.—Nielsen reports that "leocillin," a penicillin preparation with special affinity for lung tissue, gave excellent results in the treatment of 60 cases of acute otitis media. Patients under 7 received 150,000 units once daily, those over 7 received 300,000 units, which was the dosage given in his procaine-penicillin investigation and three-fourths of the dosage given in his dipenicillin studies. Complicating otitis in patients with infection of the respiratory tract is thus cured with a preparation adequate for the pulmonary affection, and "leocillin" treatment of acute otitis in patients with simultaneous catarrhal affections cures both the otitis and the infection of the respiratory tract.

Zeitschrift für Kreislaufforschung, Darmstadt

40:449-512 (Aug.) 1951. **Partial Index**

Relative Importance of Electrokymography Among Methods of Registration of Cardiac Pulsation. K. Heckmann.—p. 449.
*Electrocardiographic Changes During Operation for Mitral Stenosis. J. Drewes, S. Effert and F. Loogen.—p. 479.

Electrocardiographic Changes During Operation for Mitral Stenosis.—On four patients in whom an operation was performed for pure stenosis of the mitral valve, electrocardiographic records were made before and after the operation and during the important phases of the intervention, a continuous registration being impossible for technical reasons. Exposing the heart, opening the pericardium, and the placing of purse-string sutures exerted no influence on stimulus formation and conduction. However, when the contracted mitral valve was split by introducing the index finger through the left auricle and by spreading of the clamp blades, disturbances in rhythm resulted. Whether this disturbance in rhythm is the result of a mechanical irritation produced when the finger advances from the auricle to the valve or is caused by the disturbance in blood perfusion, because of the brief obstruction of the mitral ostium, cannot be said. The change in sinus frequency may result from a number of factors. At any rate, the electrocardiographic changes suggest the risk of the possible development of ventricular flutter or fibrillation, and, in order to reduce this risk, it is essential to shorten the intracardiac intervention as much as possible.

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BOOK REVIEWS

Physical Diagnosis. By Raymond W. Brust, A.B., M.D., F.A.C.P., Associate in Medicine, University of Pennsylvania Medical School. Introduction by Truman G. Schnabel, A.B., M.D., F.A.C.P. Cloth. $4.50. Pp. 294, with 60 illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1951.

Philadelphia has been noted for many years for the excellency of its physical diagnosticians, as well as for the emphasis placed in its various medical schools on the importance of learning the principles of physical diagnosis. Also, Philadelphia has produced in "Diseases of the Chest and the Principles of Physical Diagnosis," written by George W. Norris and Henry R. M. Landis, one of the American classics in this field.

Dr. Brust's book is worthy in the best traditions of writing on physical diagnosis. He stresses the importance of accurate history-taking, without confusing the student with the intricacies of psychiatric case history-taking. The importance of doing a complete and thorough physical examination is properly accented. The student using this book will not be burdened with tricky physical signs named after long-dead European physicians. Nor will his mind be diverted from the text by illustrations of all types of physical defects. The chapter on the mental state and speech disorders is well done from the point of view of physical diagnosis, as are those on the nervous system and the important cranial nerves.

This textbook is excellent, and, when properly used to complement a thorough and practical course in normal and abnormal physical diagnosis on patients (not lectures), will do much to produce students of medicine who have confidence in using their own senses for the diagnosis of disease. In this day of thousands of laboratory tests, many of which serve only to confuse and all of which increase the cost of medical care, confidence in one's own ability in physical diagnosis is probably the most precious possession of a physician.

Meister der Chirurgie und die Chirurgenschulen im deutschen Raum: Deutschland, Österreich, Deutsche Schweiz. Von Prof. Dr. H. Killian und G. Krämer. Cloth. 24.80 marks. Pp. 232, with 32 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A.: Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

The authors present a history of the great institutions teaching surgery in Germany, Austria, and in the German-speaking territory of Switzerland. Their emphasis is mainly on developments in these countries during the 18th and 19th centuries, when German surgery rose to world fame. There is also a rather stimulating account of the history of medieval surgery and of the origin of the illustrious school in Italy during the 12th and 13th centuries. The long struggle between unscholarly surgical technicians and "highbrow" but inefficient theoretical teachers of medicine is described. From this struggle evolved the skilled, scientific, modern surgeon.

The master surgeons and teachers of the German-speaking universities came from such places as Prague, Vienna, Heidelberg, Cologne, Freiburg, Berlin, Zurich, and Bern. Many a member of the older generation of American surgeons will find the biography of his European teacher and a record of his work in this book. The younger surgeons will find the genealogical charts of the German chairs of surgery fascinating and revealing reading; for example, the recently deceased Sauerbruch is shown as an outstanding pupil of von Mikulicz, who was a student of Billroth, who in turn can be traced back to Langenbeck.

The history of prominent teachers of surgery in the greater German universities has been brought up to date. The account nevertheless had to be selective, not only because of limitation of space but also because of the difficulty in evaluating the permanent merits of recent generations, on which time alone will pass further judgment. One wonders, however, why the name of Finsterer was mentioned in a very abbreviated sense and that only politically. This book should make interesting reading for anyone interested in the subject and who can read German.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Oral Rehabilitation: Complete Occlusal Reconstruction, Treatment of Dental Deformities and Related Subjects, The Closed Bite. By Jerome M. Schweitzer, B.S., D.D.S., Consulting Dental Surgeon, Woman's Hospital, New York City. Cloth. $20. Pp. 1161, with 1157 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

This publication is largely a review of the literature on the various phases of oral reconstruction, with a summary and evaluation by the author of the theories and methods presented in each section of the book. The early chapters of the book offer a thorough presentation of the anatomy and physiology of the masticatory apparatus, including chapters on the anatomy of the temporomandibular joint and the muscles of mastication as well as a thorough exploration of the various theories of mandibular movement. There is a discussion of temporomandibular joint radiography and the various pathological conditions encountered in the joint and related structures and their treatment. A large portion of the book deals with a discussion of what constitutes normal occlusion and the vast number of variations from normal seen in the human teeth. Approximately the last 300 pages deal with the indications for, and methods of, oral reconstruction.

There is rarely seen a more thorough coverage of the literature in any one field than is presented in this book. Some 563 authors are quoted, and in many instances several publications by each author are cited. However, this very thoroughness will possibly prove the book's greatest weakness as far as the average reader is concerned, since many old and now obsolete theories and methods are presented in great detail. A case in point is the injection of sclerosing solutions into the temporomandibular joint. Several pages are devoted to the technique of such injections, so that the casual reader might think such therapy entirely acceptable if he did not carefully read the author's further discussion, in which he points out its dangers. To be sure, the author's conclusions in this instance are generally sound, as they are in most other cases; but the book requires careful reading to avoid picking up misconceptions. For these reasons the book is not recommended for cursory reading, but to the critical student of oral rehabilitation it should prove invaluable. The author is well qualified to present his subject and has obviously spared neither time nor work in its preparation. His efforts should contribute much to this specialized field of dental practice.

The Management of Fractures, Dislocations, and Sprains. By John Albert Key, B.S., M.D., Clinical Professor of Orthopedic Surgery, Washington University School of Medicine, St. Louis, Mo., and H. Earle Conwell, M.D., F.A.C.S., Associate Professor of Orthopaedic Surgery, University of Alabama School of Medicine, Birmingham. Fifth edition. Cloth. $16. Pp. 1232, with 1195 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

Although there have been many books published during the past two decades on the treatment of fractures, dislocations and sprains, only three are worthy of note as books of reference. One was first written and published in Austria; a second came out of England; and the third is this splendid almost encyclopedic reference work. One of the two authors, John Albert Key, has not only been an outstanding teacher of orthopedic surgery and a widely known and admired clinician but has contributed much in solid, basic research, carried on in his own laboratories at Washington University School of Medicine in St. Louis, where he is clinical professor of orthopedic surgery, and associate surgeon of Barnes, Children's, and Jewish hospitals. Albert Key is both careful and thorough in all things that he does, and is perhaps the most stimulating and pertinent critic among orthopedic surgeons and surgeons of trauma.

H. Earle Conwell, co-editor with Dr. Key, thoroughly trained in all the disciplines of the therapy of fractures, dislocations, and sprains, for more than 20 years has had a most extensive practical experience in dealing with traumatic injuries as chief of the orthopedic service of the South Highland Infirmary and as consulting orthopedic surgeon or attending orthopedic surgeon to five other hospitals in Birmingham, Ala. In these hospitals he has been responsible for the treatment of the injuries suffered by thousands of employees of the coal mines and steel

mills of the Birmingham area. Thus, we have combined in this book of orthopedic trauma the wisdom that comes of wide clinical experience and extensive laboratory research.

The first edition of this excellent book was published in 1934. In the preface of the first edition Key and Conwell state that the purpose of this text is to furnish a practical working guide in the treatment of fractures, dislocations, and sprains. The first edition as well as all subsequent editions included a separate chapter on the subject of injuries as they are provided for by the Workmen's Compensation laws. There are chapters dealing with fractures of the face and skull and trauma to the brain that were written by specialists in those fields.

The popularity of this book has been no surprise to those who know Key and Conwell. Medical students, surgeons of trauma, orthopedic surgeons, and the orthopedic physicians of the United States armed forces for almost two decades have turned to this reference book when in need of knowledge concerning their most difficult orthopedic traumatic problems. In this edition the authors have deleted many illustrations and have shortened the text in an attempt to make the book less bulky. However, the total volume of this book is very slightly reduced over that of the previous editions, because many new illustrations and much material describing new methods or modifications of old methods have been added. Among the more important changes are those of the modern treatment of compound fractures and adequate descriptions of the use of medullary fixation of fractures of the femur and of the tibia. The changes in this text have been extensive, and the entire book has been reset. This is a textbook that must be in the library of all orthopedic surgeons or surgeons of trauma who wish to have a complete set of the best reference books on the subject of the treatment of fractures, dislocations, and sprains.

Psychological Factors of Peace and War. Edited by T. H. Pear. Contributions by G. W. Allport, and others. Cloth. $4.75. Pp. 262. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1950.

The United Nations Association is to be congratulated for sponsoring and publishing a volume so relevant to the basic troubles of modern times. This book contains 10 specific studies by nine distinguished psychologists on what are perhaps the most important, and to the layman certainly the most interesting, sociopsychological aspects of war and aggressive behavior. Above all, the informed public needs to know more about this attitude and the reasons for it, as is shown in Dr. Eysenck's contribution. He draws attention to the disturbing disagreement between the views of psychologists as compared with those of the average citizen. While the former are almost unanimous in their observations concerning the cause of war, the opinions of the general public are exceedingly confused, revealing at times dangerous irrationality and simplicity of mind. Dr. Hilda Himmelweit (Chapter 8, Frustration and Aggression: A Review of Recent Experimental Work) carries the analysis still further. She points out that the precise nature of the interrelation between frustration and aggressive attitudes, postulated by Freudians as an aggressive instinct per se, needs far more tangible evidence and analytical clarification before definite generalizations can be made. The other studies are connected variations of the same broad theme, and, to the general reader, offer an approach not too often encountered.

Soft Tissue Radiography: Technical Aspects and Clinical Applications in the Examination of Limbs. By Arne Frantzell. Acta radiologica, supplementum 85 Translated by Klas Magnus Lindskog. Paper. 20 Swedish crowns. Pp. 103, with 37 illustrations. Almqvist & Wiksells Boktryckeri-A.-B., Uppsala, 1951.

This supplement deals with the roentgen examination of the soft tissues of the extremities, without use of contrast media. It includes an analysis and survey of the technical factors involved in producing good soft tissue images. The sources of lack of clarity in the roentgen image are discussed. A number of the author's experimental findings are explained in detail and suggestions for filming are outlined. The reproductions of the roentgenograms are good, especially considering that the soft tissue image is of main interest. This is an interesting exposition of the factors involved in this type of radiography. The book is well written and is a good reference on the subject.

Hospitals: Integrated Design. By Isadore Rosenfield. Progressive Architecture Library. Second edition. Cloth. $15. Pp. 398, with 303 illustrations. Reinhold Publishing Corporation, 330 W. 42d St., New York 18, 1951.

Lincoln Steffens once said, "Nothing is done finally and right. There is not now and never has been, a perfectly run railroad, school, newspaper, bank, theater and no business is, or ever has been built, managed or financed as it should be and some day will be." Builders of hospitals will, if they follow the plans and suggestions of the author, more nearly achieve the perfect. The author suggests, however, that the changes in technique and concepts will require frequent revision of the text.

Hospitals, like human beings, develop personalities. It is pitifully apparent that many hospitals built during the past decade are the result of a resistance to change of the planners and builders. It is refreshing to find clear-cut reasoning for selection of site, of size, and of type of component units; in fact, from the hospital's concept to its completion, integration is the keynote of this book.

In many hospitals there is a lack of storage facilities and adequate provision for personnel, such as lockerrooms and washrooms. There is no guesswork in the author's determination of such facilities; the requirements are ascertained by simple arithmetic. If frequency of use is any indication of the importance of a unit in the integrated hospital picture, two units deserve, in future revision, a great deal more attention. Central service or central supply (an entirely different unit from central surgical supply) is a unit being established in many more existing hospitals every year. The other unit is the pharmacy. Each year more and more therapeutic agents are introduced, placing greater importance on pharmacy service.

The problem of the small hospital is well handled in one chapter, stressing its importance in the over-all problem of health service. Hospitals for tuberculosis and other special institutions as well as the integrating of such units in the general hospital are well covered in all their aspects. Two interesting chapters are "Daylight for Hospitals" and "Artificial Illumination." Here one discovers the reasons for poor lighting in so many present-day hospitals. The mechanical plant, construction, details, finishes, and costs are as well covered as the professional aspects. The work is profusely illustrated; the plans are clear and for the most part understandable to a layman such as a trustee or similar interested person. The author's years of experience are reflected in the breadth and scope of the subject. Very few questions and problems remain unanswered. It is a valuable reference work for the architect, the student of hospital administration, and the hospital administrator.

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La tuberculosis traqueobroncopulmonar. Tomos I y II. Por el doctor Luis Sayé. Con la colaboración de los doctores Alvaro Bence, jefe del Servicio de broncoscopia de la Cátedra de patología y clínica de la tuberculosis de la Facultad de medicina de Buenos Aires, y Diego Fernández Luna, director del Instituto central de patología general y de la tuberculosis, Buenos Aires. Cloth. Pp. 598; 610, with 1018 illustrations. Editorial Guillermo Kraft Limitada, Reconquista 319-327, Buenos Aires, 1950.

The authors present an exhaustive text on the various phases of tracheobronchial pulmonary tuberculosis from all aspects, pathological, clinical, prognostic, therapeutic, and statistical. The numerous pages and figures of these two volumes, not including color plates and numerous tables, attest to the scope of the work and the importance of the subject. The first volume concerns primarily the evolution of tracheobronchial tuberculosis, the elementary study of the anatomic-clinical nature of the tracheobronchial lesions, and the frequency of tracheobronchial tuberculosis, with the anatomic pathology and general and special clinical features.

Volume 2 deals with tracheitis, tracheobronchitis, and tuberculous bronchitis. Included are primitive tracheal tuberculosis, the forms of primitive infection, the primitive bronchial stenosis, and tracheobronchitis. Hematogenous tuberculosis is well presented in its many aspects and, finally, primary infection tuberculosis is covered in all its phases; anatomic, pathologic, experimental, epidemiological, bacteriological, and diagnostic.

The volumes are well prepared, and illustrations are well chosen and printed. Written in Spanish, these volumes will appeal to all conversant with this language. They can be recommended for tuberculosis and thoracologic libraries. The authors are thoroughly conversant with their subject and have made every effort to present all phases of the subject completely.

QUERIES AND MINOR NOTES

PROTOVERATRINE IN HYPERTENSION

TO THE EDITOR:—*There have been reports of beneficial results from the use of protoveratrine in the treatment of hypertension. Is this preparation available commercially and if so where can it be secured?*

Dorn S. Hower, M.D., Lewistown, Pa.

ANSWER.—Protoveratrine is in use at the Massachusetts General and Beth Israel hospitals in Boston in a special investigation of its physiological and clinical effect in hypertension. It has been used both parenterally and orally and at present is being given orally to 25 ambulatory patients (in some cases for over a year) by Dr. James H. Currens, who is gathering data about the value of this particular purified preparation from veratrum album. The drug is not yet on the market but is prepared by Eli Lilly and by Pitman & Moore of Indianapolis for investigative purposes. It gives considerable promise for future therapy and seems to be the best of the veratrum preparations that have been tried.

DIRECT INOCULATION WITH TUBERCLE BACILLI

TO THE EDITOR:—*What are the probabilities of direct inoculation through a stab wound of tubercle bacilli? A butcher of cattle infected with tuberculosis, during the course of nine years has received several dozen stab wounds in the legs with a knife covered with blood from tuberculous cows. I should like to know, also, the preferred treatment for a wound in which a known inoculation has occurred.*

J. R. Stacy, M.D., Oklahoma City.

ANSWER.—There are possibilities, and strong probabilities, that butchers working with tuberculous meat will sooner or later contract the disease, owing to superficial wounds, either from knives or abrasions. The type of tubercle called "anatomical wart" occurs in butchers, and also in physicians and technicians working on tuberculous cadavers. Most of these lesions remain localized and heal without producing generalized disease. However, occasionally systemic disease develops from them. Before the use of streptomycin, treatment was a matter of watchful waiting. Now streptomycin is administered, and the infected part immobilized.

PREGNANCY AND BACTERIAL ENDOCARDITIS

TO THE EDITOR:—*A normal pregnant woman (gravida II, para I) last menstruated five months ago. Her first pregnancy terminated normally in 1947. In April, 1949, the patient had subacute bacterial endocarditis, with a positive culture for 10 days for nonhemolytic enterococci, which responded to treatment with a penicillin-streptomycin mixture. The blood culture has not been positive since that time. Splenomegaly and petechiae were present only for a short time during the early course of the disease. A loud harsh systolic murmur developed, maximal in the mitral area and transmitted over the entire precordium. This is still present. Does this woman need regular blood cultures before labor begins? Does she need antibiotic treatment at any time before delivery?* *M.D., California.*

ANSWER.—If this patient does not have fever and is not ill now or near the time of labor, there is no point in taking blood cultures. However, the patient should be given a penicillin-streptomycin mixture for three or four days before the expected day of delivery and surely for two or three days after the baby is born, because the danger of postpartum infection is great.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

RENAL CALCULI IN A YOUNG MAN

TO THE EDITOR:—*My son, who is 20, is a patient at an air base hospital. Three weeks ago he passed a renal calculus, causing pain, hematuria, and urinary frequency lasting five days. He is now free from pain, although he does have some hematuria. X-rays reveal several calculi in both kidneys and depositions in the prostate and possibly in one adrenal. What quanitative blood tests would reveal the cause of such a condition in a person of that age? What treatment should be instituted, and what is the status of the possibility of dissolution of renal calculi?* *J. H. Teusink, M.D., Cedar Springs, Mich.*

ANSWER.—The possibility of hyperparathyroidism should be excluded by blood chemical analysis for calcium, phosphorus, and alkaline phosphatase. If possible, the calculus or gravel that has been passed should be analyzed to determine its exact composition. The treatment will depend on the chemical nature of the calculi. Since they presumably contain calcium, the intake of calcium-containing food, especially milk and milk products, should be strictly reduced. If the urinary calcium excretion, as shown by a Sulkowitch test, continues to be high, the administration of relatively large amounts of aluminum gels as advocated by Shorr and Carter (*J. A. M. A.* **144:**1549 [Dec. 30] 1950) is indicated. With this treatment and a high fluid intake, residual calculi may gradually dissolve, if they consist chiefly of calcium phosphate. Urine cultures should be made to determine the presence of possible infection and indicate the appropriate antibiotics. If there is any chemical suggestion of parathyroid dysfunction, x-ray survey of the bones might help. Finally, careful studies should be made of renal function, including serum chloride and bicarbonate determinations, to detect a possible specific distal tubular impairment of ammonia production with secondary hyperchloremic acidosis, osteoporosis, and nephrocalcinosis.

NUMBNESS OF FOREARM

TO THE EDITOR:—*I have seen several patients with psychiatric disorders, chiefly of an anxiety nature, who have complained of frequent numbness and "falling asleep" of the forearm and hand, chiefly on the left side, often with onset in the ulnar areas but rapidly spreading to the entire involved area. What is the physiologic explanation of this phenomenon? Is there any specific symptomatic treatment aside from treatment of the primary cause, the neurotic process itself?*

Edward Dengrove, M.D., Asbury Park, N. J.

ANSWER.—The problem as designated falls into two categories: 1. The primary neurotic process is one that should be treated directly by psychotherapy. Whether this can be handled by psychotherapy in the ordinary sense or a form of psychoanalysis long or brief will depend on the factors of the problem. These can be determined only after a careful examination of the patient by a qualified psychiatrist.

2. As regards the numbness and "falling asleep" of the forearm and arm, chiefly on the left and chiefly in the ulnar areas, it is suggested that a careful neurological examination be done to rule out local disease. This region, as well as its spinal cord connections, is the site of many diseases, and a complete examination should be done. Among other things there is a possibility of a pressure involvement as the person relaxes and compresses this nerve at the elbow. Scalenus anticus syndrome, cervical rib, syringomyelia, and numerous other affections must be considered. Certainly no one would hazard a guess without a careful review. It is entirely possible that some of the symptoms may be functional in origin and may be related to the original neurotic process, but one should be loathe to accept such an explanation until a comprehensive examination has been carried out.

ABNORMAL SENSATIONS FOLLOWING CEREBROVASCULAR ACCIDENT

To the Editor:—*Is there any cure for paresthesias (pin and needle sensations) of the arm of a man, 75, who collapsed two years ago, apparently owing to a cerebral insult in a sensoric field, and who has since been suffering from these often unbearable sensations continuously (except during sleep) without any motor disturbances? Short-wave, faradic-galvanic treatment (of the contralateral part, too), infiltration of the stellate ganglion, codeine, and infrared and ultraviolet rays have been ineffective. Would procaine hydrochloride given intravenously help? Do you have any other suggestions?*

Egon E. Lustig, M.D., New York.

Answer.—Abnormal sensations following a cerebrovascular accident (thalamic hyperpathia) are most intractable phenomena. Cervical sympathetic block of the contralateral side, or paravertebral block of the second to fourth dorsal sympathetic ganglions on the painful side may help. Centrally acting drugs, such as mephenesin, can be tried cautiously. In this patient, section of central sensory pathways cannot be considered. Procaine hydrochloride given intravenously and very slowly, in 1:1,000 dilution, may give temporary, but not lasting, relief.

MYOCARDIAL INFARCTION

To the Editor:—*Alpha-tocopherol intramuscularly with calcium gluconate intravenously has been used postoperatively to prevent formation of thrombosis. Can these drugs be used for the treatment of acute myocardial infarction? Would they be as effective as heparin? Could the calcium be given orally?*

M.D., Kentucky.

Answer.—Claims made regarding the value of alpha-tocopherol and calcium gluconate for the prevention of thrombosis have not been substantiated by other investigators. The evidence regarding the effect of these substances on the antithrombin level and their importance in preventing clotting of the blood in vivo is inconclusive. No evidence has been advanced in the literature to demonstrate that these agents are of any value in the treatment of acute myocardial infarction. Heparin and bishydroxycoumarin (dicumarol®) have been demonstrated to produce a pronounced effect on the death rate and the incidence of thromboembolic complications in acute myocardial infarction (Wright, I. S.; Marple, C. D., and Beck, D. F.: Anticoagulant Therapy of Coronary Thrombosis with Myocardial Infarction, *J. A. M. A.* **138**:1074 [Dec. 11] 1948). Although the use of calcium in this regard has no sound basis in experimental or clinical experience, it may be administered orally if desired.

DUODENAL STASIS AND HYPERPERISTALSIS OF STOMACH

To the Editor:—*A well-developed and well-nourished man, 41, has been examined at many famous clinics; the only diagnosis is hyperperistalsis of the stomach, with rapid emptying. The patient may have pain after he eats, relieved by vomiting; if he does not have pain, he may be nauseated, which is also relieved by vomiting. Again, if he does not have a sensation of something in his stomach, he finds the only remedy for his nausea is food. Beef and pork products cause nausea in about 30 minutes to one and one-half hours, but when he vomits he feels better. He cannot eat anything with fat in it, as it will do the same thing. What foods and drugs decrease the emptying time of the stomach? Banthine,® sedation, and belladonna preparations are of no help.*

John F. Rainey, M.D., Anderson, S. C.

Answer.—This patient, in addition to having hyperperistalsis of his stomach, may have duodenal stasis, which may be due to his having low-grade duodenal-ileus from time to time. The inquirer does not mention whether the patient has free hydrochloric acid in the stomach, whether the vomitus is yellow or green, or whether there is evidence of atrophic gastritis.

Since banthine® (beta-diethylaminoethyl xanthene-9-carboxylate), sedation, and belladonna preparations have been tried, it is suggested that the patient assume a knee-chest position for 10 minutes immediately after meals. He should sleep with the foot of his bed elevated 12 inches. These simple measures may relieve his nausea and his desire to vomit. His intolerance for fatty foods suggests a disturbance in the biliary tree and, particularly, a hypokinetic type of dyskinesia in which the gallbladder does not empty, but relaxes, when fats are brought in contact with the ampulla of Vater. This could be easily determined by a cholecystogram. Complete neurological examination, to rule out cerebral pathology as a cause of the interabdominal trouble, is suggested. If clinical improvement is not obtained, an intravenous pyelogram, to discover if there is intermittent hydronephrosis, associated with nephroptosis, may be worth while. Perhaps there is some obstruction to the passage of urine from either kidney. The patient may be given 15 minims (9 cc.) of dilute hydrochloric acid in a suitable vehicle a half-hour after meals, to overcome the nausea. In the last analysis, the description best fits that of patient with intermittent duodenal stasis bordering on ileus.

EPILEPSY

To the Editor:—*A man, 29, had his first epileptiform seizure while in the army in 1944. He had no more seizures while in army. After discharge he completed his last two years of college. He now holds a position requiring much mental effort and concentration. Within the past two years he has had several seizures. Two electroencephalograms were interpreted as normal. General physical examination was normal, including sugar tolerance tests. The childhood history is noncontributory. Are pneumoencephalogram and arteriogram indicated?*

M.D., Pennsylvania.

Answer.—A seven year history, absence of neurological and electroencephalographic abnormalities, or symptoms of intracranial pressure argue against an expanding lesion. Absence of a history of brain injury, or focal seizures would argue against any form of organic epilepsy. Therefore, institution of drug therapy seems of more immediate importance than the suggested examinations.

BAGS UNDER THE EYES

To the Editor:—*I read all the explanations given by your four consultants in answer to the query on "Bags Under the Eyes," in* The Journal, *March 17, 1951, page 858. I am of the opinion that another explanation should be added. A few years ago Dr. Berardinelli, professor of internal medicine at the School of Medicine of the University of Brazil, presented to the Academia Nacional de Medicina the following theory.*

The "bags" about which Dr. Mandel inquires may be found also in certain diseases of the biliary tree. This presentation was in December, 1945, and since then this author and some other Brazilian doctors have had the opportunity of confirming this opinion. Recently a paper by Dr. Berardinelli appeared in the French literature. He described a new sign for the cholecystopathies: bilateral edema of the lower eyelids.

"The clinical drainage of the gallbladder (by duodenal intubation or a cholecystokinetic medication) reduces the edema, may even in certain cases, make it disappear completely. This sign may be able to guide us in those cases in which the classical features of the cholecystopathies are not so evident. Also from an esthetic point of view, especially in women, knowing the origin of the edema of the lower eyelids permits us to follow an efficient and rational therapy.

"The pathogenesis is obscure: it may have something to do with the fact that the eyelids on account of their soft connective tissue, are the seat of minimal edemas and by the humoral alterations probably present in the cholecystopathies, may induce the bilateral edema."

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CORRECTION

Nitrite Instead of Nitrate.—In the answer to the query entitled "Isopropyl Alcohol" in The Journal, November 24, page 1308, in the ninth line from the bottom of the right hand column the word "nitrate" should have been "nitrite."

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